

AUGUST 9, 1954

Figuring Diesel Tonnage Ratings . . . p. 54

# RAILWAY AGE

The Standard Railroad WEEKLY for Almost a Century

IN THIS ISSUE:

Another Idea  
In Piggyback

Truck Patrol Cars  
Ride Road or Rails

Symes' Prescription  
For the Railroads

First Aid for  
Crossing Accidents

*The best drop bottom  
combination..*

**REDUCES DEAD WEIGHT  
..CUTS LABOR COSTS!**



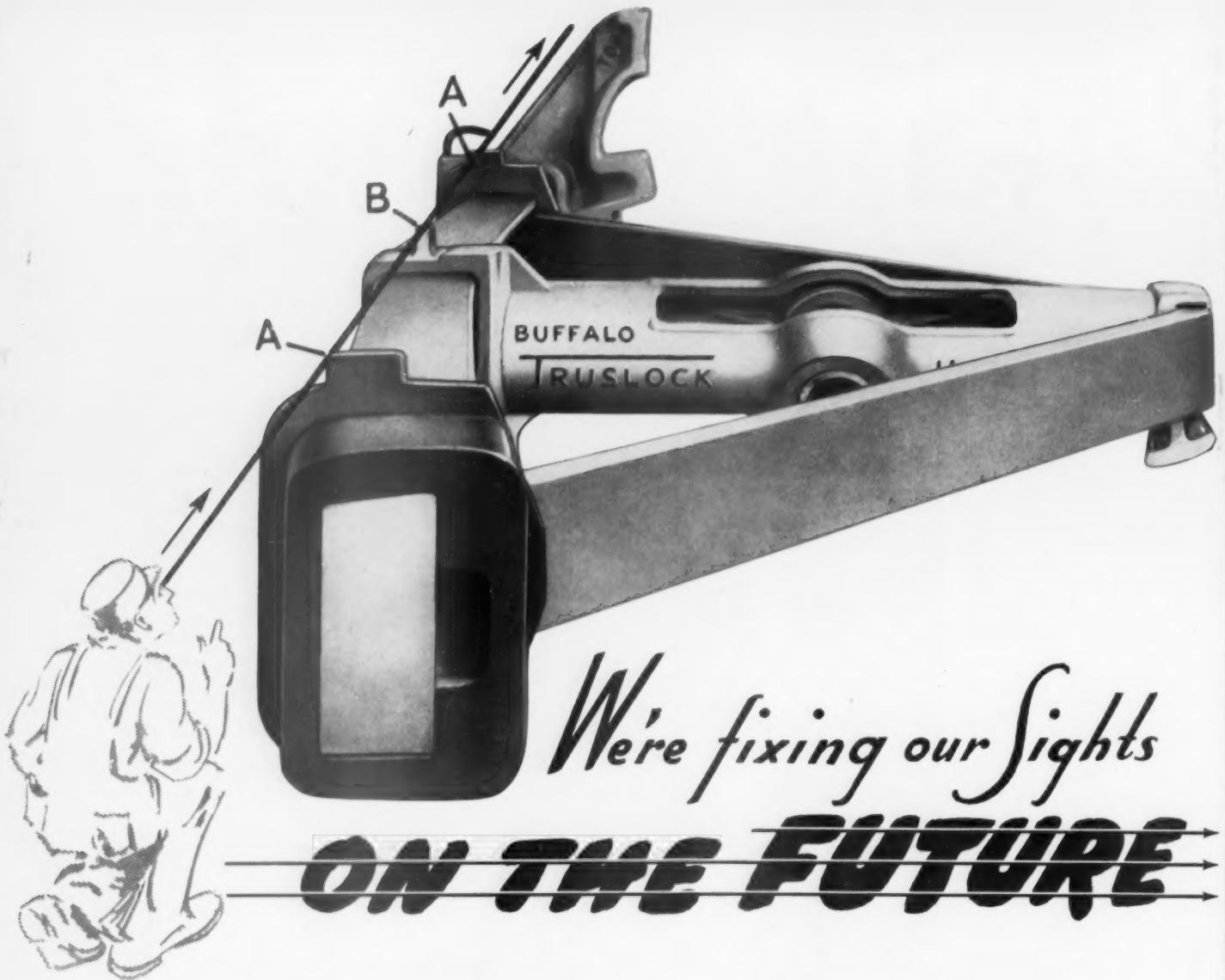
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and  
Adjustable Locks**

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POSITIVE DOOR FIT  
INDIVIDUAL DOOR OPERATION  
SINGLE DOOR MAINTENANCE

THE WINE RAILWAY APPLIANCE CO., TOLEDO 9, OHIO

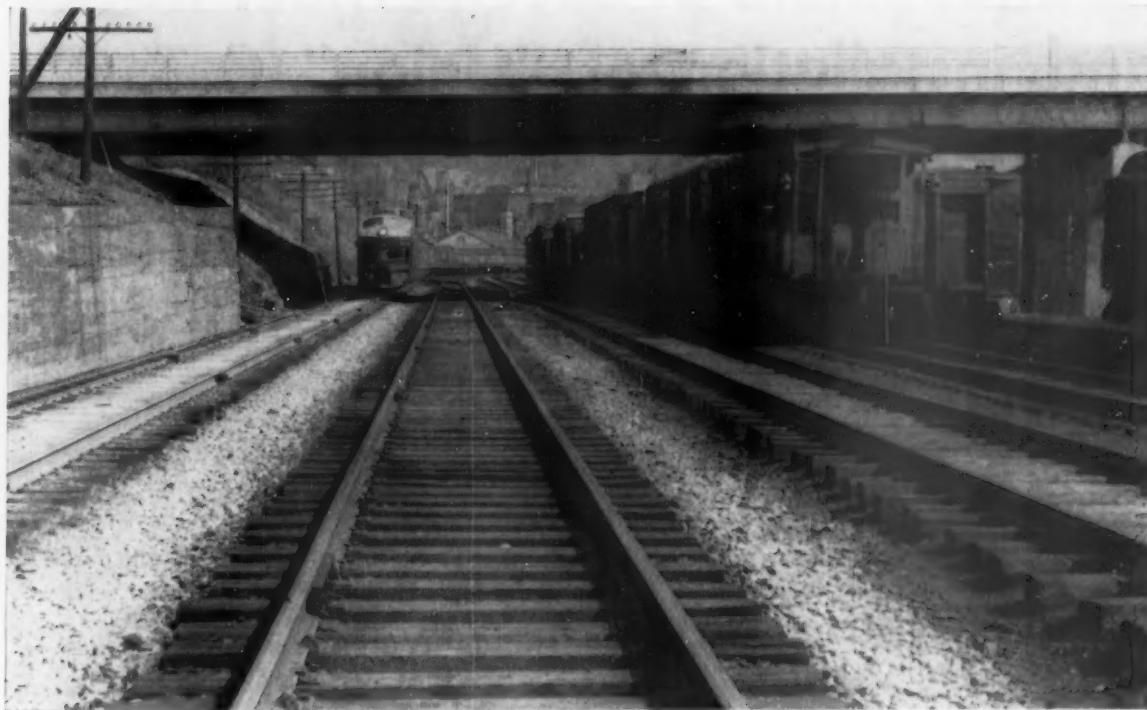


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This span of the new highway bridge over the Youghiogheny River at Connellsville, Pa., was built almost entirely of Mayari R. Note the discoloring evidence of corrosive exhaust fumes. Bridge was fabricated and erected by Bethlehem.

# DIESEL FUMES

## A tougher or easier problem than cinder blast?

As the steam locomotive passes from the railroad scene, it takes with it a long-time enemy of bridges and other overhead structures—exhaust blasts. But does that eliminate the problem of corrosion caused by trains passing beneath?

Not at all, says at least one railroad bridge engineer. According to his studies, cinder blast ranks well below fumes as a destroyer of structural steel. And diesel fumes often contain sulphur, which when combined with moisture forms highly corrosive sulphuric acid to attack the vital steelwork.

The designers of the new highway

bridge shown above thwarted both corrosion and cinder blast by using Mayari R high-strength, low-alloy steel in the span over the tracks. All main material was fabricated from Mayari R, as was all detail material except sole and masonry plates and expansion dam at the hinge. In addition,  $\frac{1}{2}$ -in. blast plates of Mayari R were hung over each of the six tracks.

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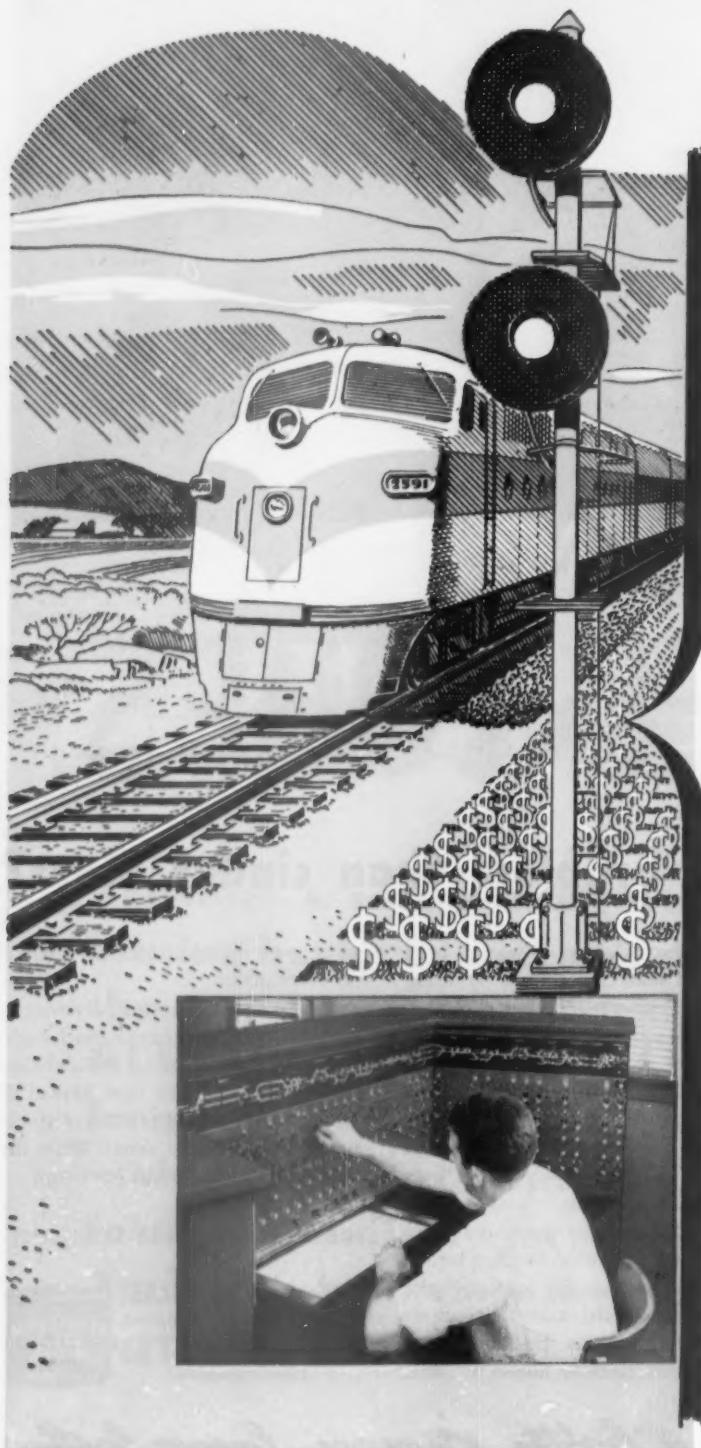
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# Mayari R makes it lighter... stronger... longer lasting

# Abandonment of Second Main Track and installation of "Union" C.T.C. avoided a \$1,500,000 expenditure for track renewal



## Here's the Record\*

1. 55.56 miles of second main track abandoned.
2. 1.45 miles of siding abandoned.
3. 10.25 miles of second main converted to siding.

And the following additional advantages were effected:

1. Reduced costs of directing train movements.
2. Saved more than one hundred thousand dollars annual maintenance and operating costs.
3. Increased safety of train movements.
4. Provided an annual return:

On Capital Investment 27.3%  
On Total Cost 18.8%

\*Factual data supplied upon request.

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DIVISION OF WESTINGHOUSE AIR BRAKE COMPANY

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August 9, 1954

Vol. 137, No. 6

## Week at a Glance

Dual rates will end in the East under a proposal—now formally placed on the docket—forecast in *Railway Age* in June. This “biggest single step” yet taken toward tariff simplification will effect integration of exceptions to No. 28300 tariffs. **11**

Department of Defense transportation activities are under study by a “Hoover Commission” subcommittee headed by Lackawanna President Shoemaker. **12**

Convention plans are complete for the Chicago meetings, beginning September 13, of the Roadmasters’ and Bridge & Building Associations. **13**

Earnings of Class I roads were down in June as compared with the same month of 1953, but the unfavorable percentage was somewhat less for the month than for the first half of 1954 as compared with the same period last year. **13**

**FORUM:** A prescription for the railroads is offered by PRR President Symes, not as a palliative to reduce the suffering of starvation, but as a tonic to stimulate the restoration of good health. **51**

With gates at three highway grade crossings and barriers at four, the GM&O reduced operating costs and increased safety for trains, as well as for automobiles and pedestrians, in one main-line Illinois town of 2,000. **52**

How to rate diesel locomotives over complex profiles, taking into account the various factors affecting practical train tonnage limits, is developed into a graphic technique by P. R. Mueller of the B&O. **54**

A trucker’s idea for piggyback—one which in effect would make a container out of the body of the semi-

NOW-SAVE UP TO  
**\$200. PER FREIGHT CAR**  
with new Hyatt roller  
bearing journal boxes!

With the same ease of assembly and  
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**Current Statistics**

Operating revenues, five months	
1954 .....	\$ 3,805,777,942
1953 .....	4,402,891,403
Operating expenses, five months	
1954 .....	\$ 3,072,350,378
1953 .....	3,333,975,239
Taxes, five months	
1954 .....	\$ 365,310,470
1953 .....	528,226,305
Net railway operating income, six months	
1954 .....	\$ 345,222,857
1953 .....	548,668,653
Net income, estimated, six months	
1954 .....	\$ 224,000,000
1953 .....	418,000,000
Average price railroad stocks	
August 3, 1954 .....	71.91
August 4, 1953 .....	64.64
Carloadings, revenue freight	
Thirty weeks, 1954 .....	18,928,034
Thirty weeks, 1953 .....	21,890,572
Average daily freight car surplus	
Week ended July 31, 1954 .....	84,958
Week ended Aug. 1, 1953 .....	26,506
Average daily freight car shortage	
Week ended July 31, 1954 .....	268
Week ended Aug. 1, 1953 .....	2,186
Freight cars delivered	
June 1954 .....	2,650
June 1953 .....	6,463
Freight cars on order	
July 1, 1954 .....	13,860
July 1, 1953 .....	52,315
Freight cars held for repairs	
July 1, 1954 .....	120,104
July 1, 1953 .....	95,768
Average number of railroad employees	
Mid-June 1954 .....	1,073,847
Mid-June 1953 .....	1,229,169

RAILWAY AGE IS A MEMBER OF ASSOCIATED BUSINESS PUBLICATIONS (A.B.P.) AND AUDIT BUREAU OF CIRCULATION (A. B. C.) AND IS INDEXED BY THE INDUSTRIAL ARTS INDEX AND BY THE ENGINEERING INDEX SERVICE. RAILWAY AGE INCORPORATES THE RAILWAY REVIEW, THE RAILROAD GAZETTE, AND THE RAILWAY AGE GAZETTE.

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**Week at a Glance** CONTINUED

trailer—is proposed by John Bridge of Canadian Rail Van Systems. **59**

Cars that ride road or rails—twenty-five of them—are saving the New Haven \$120,000 annually by facilitating the job of patrolling the line formerly performed by trackwalkers and men on motor and hand cars. **62**

Painting freight cars automatically in a traveling spray booth, the Great Northern's St. Cloud shops have done away with hand spraying for sides and roofs, doing the job faster and with less paint. **66**

**B R I E F S**

Rehabilitation of the Mexican Railway, that part of the National of Mexico system between Veracruz and Mexico City, is expected to be completed by 1958 at a cost of \$20,000,000. Work is scheduled to begin this fall.

Roads handling rail-billed freight in their own trailers on flat cars may find pickings slim until their LCL service meets with more general shipper approval. One shipper recently told a rail traffic man: "The trucker who takes my truckloads also does a good job of handling my small shipments. Why should I give you the 'gravy' of trailer loads and leave him the LTL which you don't want?"

The community relations project organized by the Eastern Railroad Presidents Conference to carry the railroad story to local audiences has been cited by Public Relations News, nationally distributed management news letter, as making new and significant contributions at the "grass roots" level to the industry's public relations.

"The greatest need in the railroad industry today is an awareness of the public, and of what it means to serve the public."—D. W. Brosnan, vice-president, operations, Southern.

**TO LOWER THE COST OF MAINTAINING  
TRACK and ROLLING STOCK...**

# *use* JACKSON **MULTIPLES**

**THE ONLY ON-TRACK MACHINES THAT TAMP**

See how the blades of the JACKSON penetrate and tamp directly beneath the rail, that vital area where greatest weight is imposed. No other on-track tamper is built to do this, and therefore no other can give you the thorough consolidation of ballast at this all-important point and consequent longer-lasting job that the JACKSON achieves. The net result is track that requires considerably less maintenance — that stays smooth even under very heavy high-frequency traffic — that's kind to rolling stock and reduces the cost of maintaining it.



Nothing has ever equalled the speed and uniformity with which the JACKSON MULTIPLE puts up track in any lift from that which is no lower than the average size of the ballast used, to the very highest. Both its initial cost and its upkeep cost is far less than any other on-track tamper . . . all of which adds up to: "Finest track at the lowest possible cost per mile."



## Week at a Glance CONTINUED

**The Westinghouse Air Brake Foundation** has given \$75,000 to the Carnegie Institute of Technology. Carnegie's Graduate School of Industrial Administration will use the funds for a long-range program of business operations research in industrial fields, with particular emphasis on railroading. This action stems from the results of several railroad projects already carried out by Westinghouse Air Brake in maintenance-of-way, car distribution and classification yard operation.

**40,000 visitors in one week** took advantage of the opportunity offered by the Canadian Pacific to on-line residents to see two new passenger cars being exhibited at principal Canadian cities before going into regular service. The two cars, the first delivered of 173 being built for the road's principal trains, were visited by nearly 10,000 people in Winnipeg alone.

**New Haven President Patrick B. McGinnis** has arranged to make life easier for Navy personnel traveling, at the end of weekend leave, from Grand Central Terminal, New York, to Newport, R. I. Until recently, the sailors went by train to Providence, going on from there by bus or whatever means they could find. Now a train carries them directly to Newport without change, making stops at several convenient places.

**Plastic covers** which snap in place tightly over china dishes are being investigated as a means of reducing dishwashing on dining cars.

**The world's oldest passenger-carrying railway**, in Wales, has just celebrated its 150th anniversary. Chartered in 1804 as the Oystermouth Railway or Tramroad, the line—which now rejoices in the name of Swansea & Mumbles—began passenger operation March

25, 1807. Service is now conducted with double-deck electric tram (trolley) cars—and the line is controlled by a bus company!

**"If one is to gage truckers' attitude** from the truck lobby's propaganda, he would conclude that what they consider to be a fair tax is no tax at all."—From the July 1954 *Ohio Farm Bureau News*, in support of that state's axle-mile tax on heavy trucks.

**The Erie's employee magazine was one of** three such U. S. publications offering their readers the best explanation of the respective company's annual report, according to "Score," monthly industrial relations report of Newcomb & Sammons, management counsel. Emphasis was placed on the clarity with which financial statistics were interpreted for rank-and-file employees of each company.

**"A way to increase railroad revenues** has been suggested by a Sacramento (Cal.) truck driver: 'Build specially constructed flat cars to carry all privately owned automobiles, particularly those operated by Sunday drivers, skiers, etc.' Presumably his complaint, voiced in a letter to the Fresno Bee, is his own. But 'passenger piggyback' should certainly rate the backing of truckers who think the highways belong to them anyway."—Public Relations Office, Western Railways.

**An exhibit of "railroadiana"** has been opened to the public by the Chicago Tribune. Housed in the newspaper building's main floor lobbies, the exhibit includes some 35 scale models furnished by the Electro-Motive Division of General Motors Corporation, the Baltimore & Ohio, the Union Pacific and the Chicago Museum of Science & Industry. Many eastern and western carriers have furnished large pictures of their premier streamliners. The exhibit, entitled "The Railroads—Past and Present," is free and will continue through Labor Day.

# *Ice and infra-red rays*



*simulated the weather  
on the*



**GREAT AMERICAN RAILWAY  
System**

Weather wages war on freight cars. In their lifetime most box cars encounter all of the extremes many times as they are shuttled back and forth over the 402,603 miles of track that make up the Great American Railway System.\*

To know exactly how the PS-1 Box Car will perform in cold areas, a sample car is frequently impact tested, in the laboratory, with its welded draft lug and bolster assembly packed in dry ice. To assure superior performance wherever it goes, PS-1 materials and construction samples are proved in accelerated life tests under intermittent sun-like infra red rays and showers of corrosive salt sprays.

These and the many other laboratory findings are augmented by "on line" reports of Pullman-Standard's sales and service engineers. They study the success and failures of all types of construction on cars of all makes. Their reports contribute to the design and building of cars that will successfully meet today's and tomorrow's operating conditions and requirements.

Like the PS-1, the PS-2 Covered Hopper Car and the PS-3 Hopper Car are quality cars efficiently built to produce more ton miles of revenue at the lowest cost per year of service. If you are interested in the modern trend in freight car construction write for booklets describing these cars.

\*A typical box car moves, in one year, on 39 different roads, including two or more trips on 24 roads. (A.A.R. data)

*Built to serve best on the*



PS-1 BOX CAR

PS-3 HOPPER CAR

PS-2 COVERED HOPPER

**GREAT AMERICAN RAILWAY SYSTEM**

YOUR NEEDS CREATE THE PULLMAN "STANDARD"

**PULLMAN-STANDARD**

CAR MANUFACTURING COMPANY

SUBSIDIARY OF PULLMAN INCORPORATED

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# Announcing

## THE NEW



# 150-HP CAT\* DW15 TRACTOR

**the answer to important earthmoving needs!**

**Do you need a fast, four-wheel tractor that can work effectively in narrow, confined areas, yet keep pace with larger units?**

**The DW15 is your answer!** It has ten forward speeds up to 24 m.p.h. . . . up to 31.3 m.p.h. with optional gears. With matching scraper, it carries up to 15 cu. yds. per load at these speeds. It can maneuver in tight cut, fill or haul road situations.

**Do you need a wheeled tractor with power and exceptional luggering ability?**

**The DW15 is your answer!** Its new 150-HP diesel engine is matched to its weight and capacity. Its heavy-duty clutch and transmission match the engine. Engine, clutch and transmission are designed and built by one manufacturer.

**Do you need a unit that will produce all day without exhausting operators?**

**The DW15 is your answer!** The hydraulic booster makes steering easy . . . only eight pounds of steering effort are needed. Air-boosted flywheel clutch, constant-mesh transmission, large-capacity air brakes, anti-jackknife protection

and a comfortable bucket-type seat with hydraulic snubber provide the operator with safe, easy operation.

**Do you need a tractor that will give you a profitable day's production, day in and day out?**

**The DW15 is your answer!** Designed and built by Caterpillar, it is available with a complete line of matched units . . . scrapers, bottom dump and side dump wagons.

Call your Caterpillar Dealer today. He'll give you complete details on this new high-production, high-speed earthmoving machine. He'll show you the DW15 in action.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

## CATERPILLAR\*

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**NAME THE DATE...  
YOUR DEALER  
WILL DEMONSTRATE**

## Eastern Roads Would End Dual Rates

**Proposal to effect integration by relating exceptions to 28300 tariffs called "biggest step" yet toward tariff simplification; Other measures prescribed by Research Group**

Eastern railroads have placed upon their public docket a plan for eliminating from their territory the dual system of class rates.

The docketing formalized a proposal made recently by E. V. Hill, chairman of the Traffic Executive Association—Eastern Railroads. It was hailed by Chairman Charles S. Baxter of the Railroads' Tariff Research Group as "the biggest single step toward attaining our overall objective that has been taken to date." The group's endorsement, Mr. Baxter said, "is one of principle because of the major contribution to tariff simplification which the undertaking will make."

**Proposed to NIT League**—As reported in *Railway Age*, June 14, page 14, Mr. Hill proposed the plan in a letter to J. W. Peters, chairman of the National Industrial Traffic League's Rate Construction and Tariffs Committee. The dual system came about when the 13 tariffs publishing class rates prescribed by the Interstate Commerce Commission in the No. 28300 case failed to supplant entirely tariffs in which such rates were formerly published.

The old tariffs have remained in

effect to take care of traffic subject to classification exceptions. The docketed proposal contemplates integration by relating exceptions to 28300 tariffs. The new ratings would be the nearest approximate percentages of the 28300 rates as might be required to continue present levels.

"The proposal," Mr. Hill said, "is not in any sense a revenue measure. It is strictly to relieve a tariff problem. . . . Railroads and traffic managers of a large number of industries who are familiar with the proposal believe that the relatively few changes which will occur in rates will be largely offset by the facility with which future rates can be ascertained."

Mr. Hill also pointed out that the proposed ratings have been computed to include all "Ex Parte increases" through Ex Parte 168, and would be subject only to the Ex Parte 175 surcharges which are still temporary increases. [As to these Ex Parte increases, the ICC recently issued an order fixing July 31, 1955, as the date by which use of master tariffs must be ended and increases incorporated into the basic tariffs.]

### Tariff Improvement Report



**A PAIR OF HEAVY-DUTY AIR COMPRESSORS** capable of supplying a combined volume of 5,000 cfm at a pressure of 125 psi have been put on wheels, for the Navy's Bureau of Yards and Docks, by Clark Brothers Company, Olean, N.Y. Equipment on the 60-ft car weighs 130,000 lb, and

includes 500-hp electric motors, switchboard, transformers and cooling and lubricating systems. The Navy will use this equipment, and probably more like it, for recommissioning stored ships and to meet various emergency or temporary needs for compressed air.

Meanwhile, the Tariff Research Group has issued its thirteenth progress report, which embodied Tariff Improvement Bulletins 59 to 72, inclusive. They prescribe tariff specifications approved at the latest joint meetings (in New York and Washington) of the Railroads' Administrative Committee and the Cooperating Committee of the NIT League. The bulletins went to tariff publishing agents and tariff publishing officers of individual railroads.

Bulletin 59 standardizes the title page legend which must appear on tariffs which do not possess an independent application and, hence, are applicable only when specifically referred to by other tariffs. Bulletin 60 primarily affects the Uniform Classification, being designed to give both publicity and legal status to rulings of classification committees by adding the articles affected to the classification's index of articles, together with the number of the item under which each such article is ratable.

"Public docketing procedures will precede the addition of any such article to the index," the report explained. "Implementation of this novel and useful change will be initiated in the September 1954 Docket 164 of the Classification Committees."

**Fewer "NOIBN" Entries**—"The plan contemplates making the index of articles accomplish the same result as adding the new articles to the items in the rating section of the classification. . . . Eventually by this process a considerable number of articles ratable under 'noibn' entries . . . will appear by their individual names in the index. This will materially speed up the process of rating articles . . . and remove doubts and uncertainties as to the applicable ratings without increasing the bulk of the rating section of the classification."

Bulletin 61 covers the matter of observing a progressive sequence in the arrangement of numbered items in supplements to tariffs. Bulletin 62 generally condemns the practice of expressing rate groups in terms of numbers or letters and directs the use of names of key stations.

Bulletin 63 is concerned with the practice of showing rate bases instead of rates in rate tables of commodity tariffs. It prohibits this method of publication when the tariff contains but one line or column of rates between origin and destination stations and permits it only when the showing of actual rates in parallel columns under each head-line point would produce a tariff of such size as to be unwieldy.

**Index Standards**—Bulletin 64 establishes uniform standards to govern both form and content of com-

modity indexes in freight tariffs and classifications. Bulletin 65 spells out specifications to govern publication of class percentage and commodity rate columns. Bulletin 66 deals with locations at which the minimum weight will be shown in connection with a number of articles or commodities set up in list or tabular form when it is intended to apply the same weight to all articles.

Bulletin 67 prescribes specifications designed to standardize the form and arrangement of blanket supplements. Bulletin 68 calls for strict compliance with Classification Rule 46, being directed against the practice of inserting parenthetically in commodity descriptions, terms which limit or qualify.

Bulletin 69 directs that efforts be made to harmonize differences in descriptions and/or minimum weights when combinations consisting of factors subject to different descriptions or minimum weights are published as through rates. Bulletin 70 directs that when an item in a supplement expires by its own terms, later supplements which supersede it must carry forward the item number and a statement as to the date and supplement of expiration.

**Standard Reference Marks**—Bulletin 71 prescribes standard reference marks or certain common situations—"Z" to denote abandonment of a station or railroad, "E" with a number encircled to denote expiration date, and "F" with a number encircled to denote fourth section authorities. Bulletin 72 directs that effective dates of tariffs and supplements be staggered throughout the month to level out peaks in work loads of the ICC and other commissions.

The progress report also included supplements to previously issued Bulletins 50 and 57. Supplement 1 to Bulletin 50 is designed to avoid confusion as to the legal status of divisions arrangements and other publications designated as "tariffs" but not officially filed with regulatory commissions. It directs that the legend "Not Filed with Any Regulatory Commission" be shown at the top of title pages of such publications.

## PIGGYBACK SUPPLEMENT

The Bureau of Railway Economics Library of the Association of American Railroads, Washington 6, D. C., has issued a supplement to its "Trailers-on-Flat-Cars—'Piggy Backs' Memorandum Listing Material on History of Service 1926-1953." The supplement covers material published from February to July 15, 1954, the previous memorandum having been revised to February 2. Both memorandum and supplement were prepared by Elizabeth Cullen, librarian.

Supplement 1 to Bulletin 57 prohibits ("with reasonable exceptions") the practice of providing in tariffs that rates from or to particular groups of stations are the same as or differentially higher or lower than rates specifically published between other groups of stations.

The Research Group closed its report with a recommendation not covered by a bulletin. The recommendation was that, in tariffs of distance, individual roads consider the advisability of doing away with fractional miles, converting all such figures to whole miles.

## Roads Ask to Drop Seatrains Case

Eleven railroads have petitioned the Interstate Commerce Commission to withdraw their complaint which sought to have the commission determine how Seatrain Lines fits into the national transportation picture (*Railway Age*, April 14, 1952, page 14).

The roads said revisions in the car service and per diem agreement give Seatrain Lines access to "substantially all of the car supply of the United States," thus eliminating one source of dispute. Also, an agreement on rates between Seatrain Lines and the Pennsylvania, they stated, removed another controversial issue.



VACATION TRAVEL by rail gets a plug in these poster displays by the Van der Horst Corporation, Olean, N.Y.; "the diesel locomotive on your train," they remind Van der Horst employees, may have cylinder liners plated by that company. Checking one of the displays, here, are J. Van der Horst, left, general manager of the company; and W. M. Bramlee and A. B. Hinz, agents, respectively, of Olean's two railroads, the Erie and the Pennsylvania.

## People in the News

### Shoemaker Heads Defense Dept. Transport Group

Perry M. Shoemaker, president of the Lackawanna, has been appointed chairman of a subcommittee on transportation in the Department of Defense, according to Charles R. Hook, chairman of the Hoover Commission's committee on business organization of the department.

The subcommittee is to determine, among other things, what transportation activities the department is engaged in; the extent to which these activities compete with private transportation facilities; and the extent to which such activities can be curtailed.

James K. Knudson, former Interstate Commerce Commissioner, is director of passenger-traffic studies for the subcommittee, and John B. Keeler, traffic and transportation consultant for the Koppers Company, is director of its freight-traffic studies. Because Mr. Keeler is ill, J. R. Staley, vice-president, Quaker Oats Company, is acting director of the freight-traffic studies.

### Harper Reappointed To Retirement Board

President Eisenhower has reappointed Horace W. Harper to the Railroad Retirement Board for a new five-year term beginning August 29. The nomination went to Senate July 30.

Mr. Harper is railroad labor's representative on the board.

### Boyden Heads ICC Finance Bureau, Succeeding Boles

Roger T. Boyden has been appointed director of the Bureau of Finance, Interstate Commerce Commission, to succeed Charles E. Boles who retired July 31.

Mr. Boyden, with the Commission since August 1915, has been assistant director of the bureau since August 1948. Mr. Boles had been director of the bureau since the latter date.

Mr. Boyden, born in Philadelphia, studied civil engineering at Massachusetts Institute of Technology and received B.S. and LL.B. degrees in public utilities law and valuation from George Washington University.

He started with the commission as a junior civil engineer, subsequently becoming a senior civil engineer and valuation examiner. He has been with the Bureau of Finance since 1932.

Mr. Boles had been with the ICC since April 1921, having previously worked with the Post Office Department and Bureau of Internal Revenue. He started as an examiner with the Bureau of Finance and became assistant direc-

tor of the bureau in April 1935. A native of Barren County, Ky., he studied at Liberty College, Bethel College, where he received his B.A. degree, and Columbia University where he was awarded his LL.B. degree.

## Organizations

### Meeting Plans Ready for Track, B&B Supervisors

Practically all plans have been completed for the concurrent annual conventions of the Roadmasters & Maintenance of Way Association and the American Railway Bridge & Building Association, which will be held September 13-15 at the Conrad Hilton Hotel, Chicago.

Both groups will convene for a joint opening session in the hotel's grand ballroom, where R. P. Hart, chief operating officer, Missouri Pacific, will speak on "Increasing Responsibility of Supervisors on Today's Railroads," and M. I. Dunn, vice-president—construction and maintenance, Chesapeake & Ohio, will discuss "The Immediate and Long Range Future of Maintenance of Way." Separate business sessions are programmed for the afternoon of the conventions' first day.

A second joint session is scheduled for the afternoon of the 14th, when E. H. Hallmann, director of personnel, Illinois Central, will talk on "The Importance of Practicing Good Human Relations." The second feature address of that session covers "The Effect of the H-Bomb on Tracks and Structures."

It will be delivered by Clarence P. Fisher, general manager, Chicago Union Station Company, who is operating officer of the Northern region of the Railroad section, Illinois Civil Defense Agency. Mr. Fisher will supplement his talk with a sound motion picture.

**Field Trip**—Both groups will participate in an inspection trip of the LaGrange, Ill., plant of the Electro-Motive Division of General Motors Corporation. The Track Supply and Bridge & Building Supply Associations will sponsor the joint annual banquet on the evening of the 14th—the only formal social function of the three-day program.

Business sessions will be devoted largely to presentation and discussion of committee reports on current problems. There are eight such reports scheduled for the B&B sessions and six for the Roadmasters' meeting. Preliminary reports from three new standing committees also will be given during the Roadmasters' sessions. H. W. Kellogg, president of the association, and engineer of track, C&O, Detroit, will preside. Lee Mayfield, president of the B&B association and resident engineer, Missouri Pacific, Houston, will preside over sessions of that group.

The fall meeting of the **New England Shippers Advisory Board** will be held in the Poland Spring House, Poland Spring, Me., September 12-14, inclusive. Guest speaker will be Patrick B. McGinnis, president of the New Haven.

The next regular meeting of the **Atlantic States Shippers Advisory Board** will be held at the Hotel Seneca, Rochester, N.Y., September 29-30.

CLASS I RAILROADS—UNITED STATES		
	Month of June	1953
Total operating revenues .....	\$803,521,439	\$924,371,836
Total operating expenses .....	625,337,590	688,966,632
Operating ratio—per cent .....	77.82	74.53
Taxes .....	76,519,005	114,520,336
Net railway operating income (Earnings before charges) .....	79,680,334	99,663,741
Net income, after charges (estimated) .....	59,000,000	80,000,000

Six Months Ended June 30		
	1954	1953
Total operating revenues .....	\$4,609,299,381	\$5,327,263,239
Total operating expenses .....	3,697,687,869	4,022,941,871
Operating ratio—per cent .....	80.22	75.52
Taxes .....	441,829,475	642,493,641
Net railway operating income (Earnings before charges) .....	345,222,857	548,668,653
Net income, after charges (estimated) .....	224,000,000	418,000,000

## Freight Car Loadings

Loadings of revenue freight in the week ended July 31 totaled 683,569 cars, the Association of American Railroads announced on August 5. This was a decrease of 718 cars, or 0.1 per cent, compared with the previous week; a decrease of 110,185 cars, or 13.9 per cent, compared with the corresponding week last year; and a decrease of 49,507 cars, or 6.8 per cent, compared with the equivalent 1952 week.

Loadings of revenue freight for the week ended July 24 totaled 684,287 cars; the summary for that week, compiled by the Car Service Division, A. A. R., follows:

REVENUE FREIGHT CAR LOADINGS			
For the week ended Saturday, July 24			
District	1954	1953	1952
Eastern .....	111,964	130,950	101,233
Allegheny .....	123,668	157,884	93,092
Pocahontas .....	48,621	59,161	47,185
Southern .....	112,420	118,300	114,299
Northwestern .....	114,469	135,171	76,374
Central Western .....	117,487	122,157	116,619
Southwestern .....	55,658	57,076	58,388
Total Western Districts .....	287,614	314,404	251,381
Total All Roads .....	684,287	780,699	607,190
<b>Commodities:</b>			
Grain and grain products .....	63,482	56,137	58,486
Livestock .....	6,869	6,709	6,287
Coal .....	106,738	130,696	105,033
Coke .....	6,939	12,916	4,134
Forest products .....	37,663	45,734	49,524
Ore .....	71,511	96,237	12,268
Merchandise l.c.l. .....	39,563	65,271	68,356
Miscellaneous .....	331,522	366,999	303,102
July 24 .....	684,287	780,699	607,190
July 17 .....	694,545	791,414	609,000
July 10 .....	569,562	721,454	572,362
July 3 .....	618,997	670,273	447,516
June 26 .....	713,160	818,450	646,480
Cumulative total 30 weeks .....	18,928,034	21,890,572	20,771,993

**In Canada.**—Carloadings for the seven-day period ended July 21 totaled 78,188 cars, compared with 78,155 cars for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
July 21, 1954 .....	78,188	25,831
July 21, 1953 .....	83,693	30,638
Cumulative Totals:		
July 21, 1954 .....	1,966,694	806,796
July 21, 1953 .....	2,173,668	917,765

## Figures of the Week

### Six Months Net Off \$194 Million

It was \$224 million compared with \$418 million in first half of last year; Net railway operating income was \$345 million, compared with \$549 million

Class I railroads in the first six months of this year had estimated net income, after interest and rentals, of \$224,000,000, according to the Bureau of Railway Economics of the Association of American Railroads. This compared with net income of \$418,000,000 in the first half of 1953.

Net railway operating income, before interest and rentals, was \$345,222,857 for this year's first half. The comparable figure for the first six months of last year was \$548,668,653.

**June Results**—Estimated results for June showed net income of \$59,000,000, down \$21,000,000 from the \$80,000,000

reported for June 1953. Net railway operating income for the 1954 month was \$79,680,334, compared with \$99,663,741 for June 1953.

Gross in the first six months amounted to \$4,609,299,381 compared with \$5,327,263,239 in the same period of 1953, a decrease of 13.5%. Operating expenses were \$3,697,687,869 compared with \$4,022,941,871, a decrease of 8.1%.

Thirty-one Class I roads failed to earn interest and rentals in the first six months. Eighteen of them were in the Eastern district, four in the Southern region, and nine in the Western district.

## In Congress

### Senate Committee Approves Railroad Retirement Bill

The Senate Labor Committee last week voted to report favorably to the Senate the House-passed bill embodying railroad labor's program for liberalizing the Railroad Retirement and Unemployment Insurance Acts.

The bill, H.R. 7840, now goes to the Senate floor. It was passed in the House July 30 by a 360-0 vote with 72 representatives not voting.

It includes provisions to lower the age from 65 to 60 at which widows and dependent parents could qualify for benefits and would raise benefits for approximately 36,000 pensioners by 20%. Railroad spokesmen had attacked the bill as "unwise, shortsighted legislation" that would cost the industry some \$53 million a year. (*Railway Age*, July 26, page 9.)

## Piggyback

### ICC Piggyback Hearings Adjourned to October 12

Hearings in connection with the Interstate Commerce Commission's investigation of piggyback tariffs published by six Eastern railroads were adjourned to October 12 following three days of testimony in Washington July 27, 28 and 29.

The recess was arranged to allow the railroads time to prepare cost data and movement information on their trailer-on-flat-car operations. Trucking representatives requested this material at the opening session of the hearing which was held before Examiner M. L. Boat.

The railroads agreed to furnish the information on their operations through August 15, placing the data in the hands of interested parties by August 20. Additionally, they are to have similar information covering the period from August 15 to October 1 prepared for the resumption of the hearings October 12.

In addition to the railroad witnesses whose testimony was reported in *Railway Age*, August 2, page 6, others who spoke included H. W. Von Willer, vice-president in charge of traffic, Erie, and S. J. Witt, vice-president in charge of traffic, Nickel Plate.

Mr. Von Willer, after describing the Erie operation, called attention to the gains the trucking industry has made on the railroads since 1939. Piggyback for Erie, he declared, is a service that "places us on a competitive basis with truck transportation."

Asserting that t-o-f-c service "represents simply the use by Erie of an old transportation tool in a new way," he

pointed out that his railroad has used trucks extensively since 1933 in pick-up and delivery service and also in substituted freight service between Erie stations.

"Experimentation should be encouraged," he concluded, "in the public interest, and time alone will tell" if it is a success.

Mr. Witt cited inherent advantages of trucking services, and said truckers have a more flexible rate structure than railroads. He also indicated that the piggyback plan is a method of the railroads to offset their "competitive disadvantage" by eliminating costly yard and switching delays and providing economical "door-to-door service" in competition with trucks.

the cars will be built by ACF Industries and 500 by the Magor Car Corporation. The cars will be lined with plywood on heavy steel backing. The road's request for bids to build these cars was reported in *Railway Age*, July 5, page 11.

The Toledo, Peoria & Western has ordered from its own shops four 40-ft steel caboose cars, of which one already has been placed in service.

## Rates & Fares

### ICC Orders Increase in Kansas Intrastate Rates

Terming intrastate rates on certain commodities in Kansas "abnormally low," the Interstate Commerce Commission, acting on petition of Kansas railroads, has ruled that the intrastate rates cause "unjust discrimination against interstate commerce."

The railroads charged that the difference results from Kansas Corporation Commission's refusal to authorize the same increases granted by the ICC on some traffic effective May 2, 1952. The commission ruled that, unless the state body protests by August 13 these increases will be applied to the Kansas rates.

The commodities involved include limestone, bituminous coal, cement, hay, petroleum and petroleum products, sugar beets, clay drain tile, sewer pipes and related articles. Commissioner Freas dissented from the findings, as did Commissioner Tuggey insofar as the findings related to bituminous coal.

## Financial

### MP Common Holders Get Share of Revamped Co.

The Interstate Commerce Commission has approved a new Missouri Pacific reorganization plan which will give present common stockholders a share in the reorganized company. In previous plans the commission had found the old common without value.

The present plan modifies those previous plans, the latest of which was promulgated by the commission in 1949. The modified version must now be approved by the federal district court at St. Louis, where the reorganization proceeding is pending.

**It's the "Agreed Plan"**—Generally, the commission approved the plan agreed upon by major interests and filed recently by the MP trustee, Guy A. Thompson (*Railway Age*, May 17, page 14). That "agreed plan" was based on the plan recommended in a

## FREIGHT CARS

The Lackawanna has ordered 1,000 50-ton, 40½-ft box cars at an approximate cost of \$7,000,000. Deliveries are to start in the fall. Five hundred of

proposed report by Roger T. Boyden, director (then assistant director) of the commission's Bureau of Finance, and Examiner Homer H. Kirby (*Railway Age*, February 22, page 74).

The commission announced its action July 30 in a press release accompanied by a two-page summary of its report. The report and order in full text was to be released later.

To bring in holders of the old-company common, the plan provides for issuance by the reorganized company of 40,657 shares of Class B common. These would be distributed on the basis of one for 20 shares of the old. The Boyden-Kirby recommendations would have made participation by the old-company common stockholders dependent on future earnings.

**Control** of the reorganized company will go to holders of old-company preferred stock. They will get one share of new Class A common for each \$100 par value of their present holdings plus one share for each \$100 of accumulated dividends. The Class A stock will total 1,917,558 no-par shares. The reorganized company will have no preferred stock.

The commission fixed January 1, 1955, as the effective date of the reorganization plan. Capitalization of the reorganized company will be \$809.2 million, including equipment trust obligations. Also included will be first mortgage bonds of about \$308.3 million, general mortgage income bonds of about \$137.4 million, and non-cumulative, non-convertible income debenture bonds in the amount of \$100 million. As to the first-mortgage bonds, \$40.6 million of them may be replaced by collateral trust notes, as provided in the 1949 plan.

The new first mortgage bonds will carry interest at 4 1/4 per cent, and the general mortgage income bonds at 4 3/4 per cent. The income debentures will

be 5s. Annual fixed charges will be about \$15.1 million and contingent charges will add another \$11.6 million.

**Cash payments** totaling \$70.3 million are provided for, not including cash payable to unsecured creditors. All accumulated and unpaid interest on the old company's first and refunding mortgage bonds will be paid to the effective date of the plan. This and other provisions for mortgage claims will satisfy them in full—except the claim of holders of International-Great Northern adjustment mortgage bonds who will get securities totaling approximately 85.5 per cent of their full claim.

has authorized this road to issue \$1,840,000 of common stock, consisting of 92,000 shares, par value \$20 each. It will be exchanged for all outstanding capital stock of Overseas Terminal, Ltd., to effect a merger of the latter into the railroad company.

## Dividends Declared

**ALABAMA & VICKSBURG**—\$3, semiannual, payable October 1 to holders of record September 3.

**GULF, MOBILE & OHIO**—common, 50¢ quarterly, payable September 10 to holders of record August 23; \$5 preferred, \$1.25, quarterly, payable March 10, 1955, to holders of record February 18, 1955.

**ILLINOIS CENTRAL**—new 6% preferred, \$1.50, initial semiannual, payable September 1 to holders of record August 4.

**NASHVILLE, CHATTANOOGA & ST. LOUIS**—\$1, payable September 1 to holders of record August 11.

**SOUTHERN**—62 1/2¢, payable September 15 to holders of record August 13.

**VICKSBURG, SHREVEPORT & PACIFIC**—common, \$2.50, semiannual; 5% preferred, \$2.50, semiannual; both payable October 1 to holders of record September 3.

## Securities

### Lakefront Dock Issue Backed By B&O, NYC

The Lakefront Dock & Railroad Terminal Company has applied for authority to issue \$3,650,000 in bonds to repay funds advanced, for capital expenditures by the Baltimore & Ohio and New York Central since September 1948. Dated August 1, the bonds would be sold by competitive bids and would mature August 1, 1974. In separate applications to the Interstate Commerce Commission, the B&O and NYC proposed to guarantee the issue jointly.

**Akron, Canton Youngstown.**—*Stock Option Plan*.—The ICC has approved this company's plan to issue up to 12,500 shares of no par common stock to be sold to officers and supervisory employees. Proceeds are to be used only for capital purposes.

**Oahu Railway.**—*Stock*.—The ICC

## Security Price Averages

	Aug. 3	Prev. Week	Last Year
Average price of 20 representative railway stocks	71.91	71.09	64.64
Average price of 20 representative railway bonds	95.81	95.96	90.75

## Supply Trade

**W. C. Runnstrom**, formerly president of the **Matisa Equipment Corporation**, has announced organization of the **Camef Equipment Corporation**, with headquarters in the Railway Exchange building, Chicago. The new company, of which Mr. Runnstrom is president, will act as railroad sales representative in the



**LAST AND OLDEST MEMBERS** of what is said to be North America's first formal pension plan—the Grand Trunk's Superannuation Fund, established in 1874—met recently in Montreal at a reception for J. Harry Spence (center), who was retiring as assistant comptroller of the Canadian National. Mr. Spence, who has been with the road 52 years, is the last member of the GT's superannuation plan to go on pension. Sheldon H. Stone (right), 96, is the oldest living pensioner of the same fund. With the two pensioners is Donald Gordon (left), CNR chairman and president.



**W. C. Runnstrom**

United States for domestic and foreign manufacturers; and will represent in the U.S. a number of associate companies being established to serve the railroad industry in various South

American countries. The first—Compañía Anónima Materiales y Equipos de Ferrocarriles has been established in Venezuela, with offices at Caracas.

Three men have been appointed to managerial engineering posts in the General Electric Company's locomotive and car equipment department: Otto A. Keep, manager of control engineering; Richard Lamborn, manager of motor engineering; and Charles L. Reed, Jr., manager of engineering administration.

C. J. Chapman has been appointed general sales manager, industrial products, of the National Carbon Company, a division of Union Carbide & Carbon Corp.

C. L. Thompson has been appointed sales manager of the material handling division of the Buda Company, division of Allis-Chalmers Manufacturing Company.

A new combined sales office has been opened by the New York Air Brake Company at 90 West street, New York City, to centralize facilities of all NYAB divisions: Kinney Manufacturing Company; Dudo division; Hydrexco division; Aurora Pump Company; and the Watertown division. Lynn R. Parrish, vice-president and regional manager of Aurora, will head that division's sales force; William Chester will represent Kinney as branch manager; and William Amory will handle eastern territory for Dudo and Hydrexco.

## Railway Officers

BURLINGTON.—Steven Pentek, office manager—purchasing-stores department at Chicago, has been appointed assistant purchasing agent at Portland, Ore., succeeding Wallace C. Gregory, retired.

J. V. Wolfe, assistant to general auditor, has been advanced to auditor freight accounts at Chicago, succeeding the late G. A. K. Richard.

Hollis A. Williams has been appointed agricultural agent at Omaha, succeeding W. A. Spitsenberger, recently promoted to industrial agent at Chicago.

ERIE.—Clarence A. Lefferts, division storekeeper at Port Jervis, N.Y., has been transferred to Marion, Ohio, succeeding Roxie H. Pauling, whose retirement was noted in *Railway Age* May 24. The position of division storekeeper at Port Jervis has been abolished.

Frederick G. Hoffman, assistant general attorney at Cleveland, has been promoted to general attorney at New York.

NEW YORK CENTRAL.—Frank

J. Jerome, vice-president, has retired after 40 years' service with the NYC.

Clyde F. Meyers, terminal superintendent of the subsidiary Lakefront Dock & Railroad Terminal at Toledo, has been appointed general manager of the Toledo Terminal, of which the NYC is a proprietary line. It was incorrectly reported in last week's issue that Mr. Meyers had been appointed superintendent of the TT.

SOUTHERN PACIFIC.—Everett E. Earl, assistant to chief engineer, at Los Angeles, retired July 31, at his own request.

C. R. Murray, assistant to general purchasing agent at San Francisco, has been appointed purchasing agent at Los Angeles to succeed E. L. McCall, deceased.

Henry W. Neubaumer, acting division engineer at Sacramento, has been advanced to division engineer at San Francisco, succeeding the late J. E. Wheeler, who had been on leave of absence because of ill health (*Railway Age*, April 5, page 92).

W. H. Herrin, general freight agent

—rates, at Chicago, has been advanced to assistant to general traffic manager there, succeeding P. R. Ceder, promoted elsewhere. Mr. Herrin's successor is F. E. Kriebel, assistant to freight traffic manager at New York, who in turn has been replaced by E. N. Brown, foreign freight agent at Chicago. R. C. Hudson succeeds Mr. Brown. Harry F. Starke, general western freight agent at Chicago, retired July 31 after serving the SP for more than 43 years.

WABASH.—Virgil S. Holloway has been appointed assistant general freight agent at Kansas City, Mo., succeeding the late M. L. Courtney. O. W. Runkle has been appointed district freight agent there.

Harold L. Jackson has been appointed district freight agent at Fort Wayne, Ind., succeeding G. J. Miller, who retired August 1 after 47 years of continuous service with the road.

John A. Barrett, general passenger agent at St. Louis, has been advanced to passenger traffic manager, to succeed Tom M. Hayes, who retired August 1. Named as assistant passenger traffic manager is Harvey E. Dixon, also general passenger agent at St. Louis.

Mr. Barrett joined the Wabash in 1937 as depot passenger agent at Detroit, after having worked there for the Pullman Company as junior clerk.



John A. Barrett

He was promoted to city passenger agent in 1938, and in 1946 became district passenger agent at Philadelphia. He served in that capacity at several locations before being named general passenger agent in 1953.

Raymond F. Donohue, chief clerk—accounting department, at St. Louis, has been advanced to auditor revenues there, to succeed Fred L. Eckert, who retired July 31.

## OBITUARY

John J. Sinclair, 75, retired electrical engineer and former division engineer of the New York City Board of Transportation, died in Montclair, N.J., August 2.

## Safety

### 1953 Crossing Accidents

Grade crossing accidents showed an increase last year over 1952 figures but remained well below the postwar average, according to statistics released by the Interstate Commerce Commission.

Fatalities also rose last year but personal injuries declined and totals in both these categories were also under the average figures since 1946. The report, compiled by the ICC Bureau of Transport Economics and Statistics, indicates that motor vehicles were involved in 92% of all accidents in which 88% of the fatalities and 93% of the injuries occurred.

There were, the report states, 3,675 rail-highway grade crossing accidents last year as against 3,592 in 1952. Of the 1953 figure, 3,383 mishaps involved motor vehicles.

Fatalities rose by 70 in motor vehicle-train accidents, the total being 1,319 last year. In the same type accident there were 64 fewer personal injuries, 3,688 being recorded in 1953. Auto accidents were involved in 71 per cent of all mishaps, 70 per cent of the fatalities and 77 per cent of all injuries.

In all, there were 1,494 persons killed and 3,815 injured in all types of rail crossing accidents, the report shows. Vehicular accidents rose 24 per cent over 1952 totals, automobile and truck figures being increased by 3.6 and 1.0 per cent respectively.

As in other years, the report states, by far the great majority of accidents occurred in clear weather, 56 per cent

of all happening in the daylight with the hour between 4 and 5 p. m. showing the greatest number of accidents. This same hour showed the greatest number of deaths, 98.

Saturday held a position it has had since 1935 as the day for greatest frequency, 18 per cent of last year's total being accounted for on that day. December also maintained its position as the leading month for accidents, fatalities and injuries.

Crossing accidents where active devices or watchmen were posted accounted for but 37 per cent of all accidents, with a 22 per cent rise being recorded where the only device was a lowered gate. Decreases in accident frequency were shown where watchmen, visible, and both visible and audible, protection devices were used.

Trains moving at speeds under 20 miles per hour were involved in 40 per cent of all accidents.

The publication is part of the road's new program for the department, called "vitalization," a term picked by President Russel B. Coulter to distinguish the program from one of mere training. "Training," Mr. Coulter feels, is generally "one-way," while the TP&W's program includes improvement of methods of department heads and supervisory forces as well as men down the line.

"The Progressive Wayman," a result of suggestions made at an early meeting under the "vitalization" program, is printed on a regular office reproduction machine under editorship of the secretary to chief engineer. It lists departmental activities, procedural changes and general news.

For traffic department employees, the company has another weekly publication called "The Printed Word," which provides sales statistics and sales information.

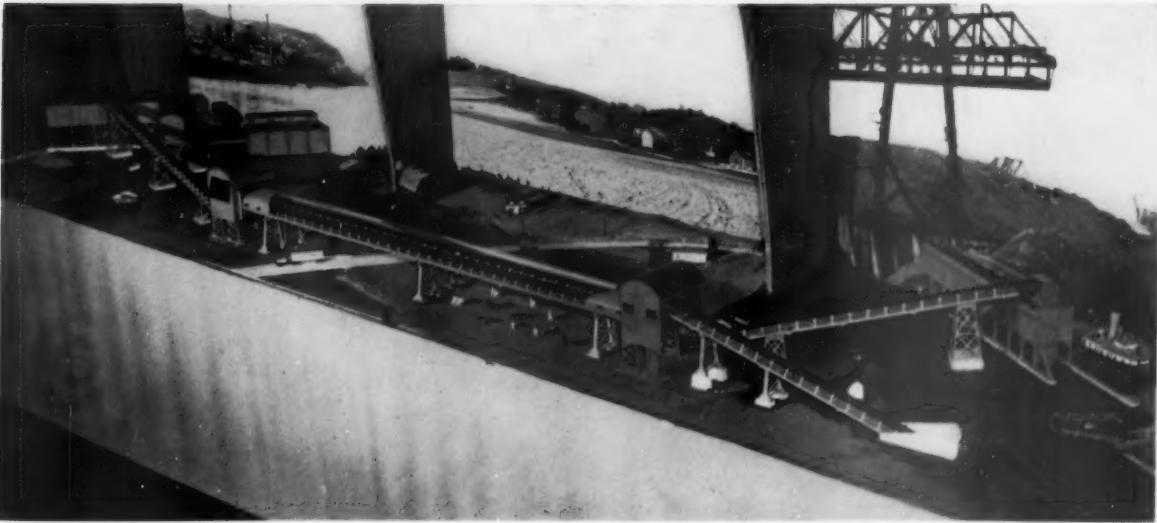
**Museum**—Another new venture of the TP&W is establishment of a railroad historical museum, known as the "Tee Pee," at Effner, Ill.

This project grew out of the need for train-crew facilities at that city, which is the road's eastern terminus, and for which the company recently acquired a restaurant and motel on paralleling Highway 24. Under guidance of R. H. Egbert, chief engineer, relics, photos and other "railroadiana" are being collected there, and the museum is already open to the public. Visitors may sign a register and receive a membership in the Toledo, Peoria & Western Railroad Company Historical Society.

## Education

### TP&W Has Monthly Paper For MoFW Department Only

Toledo, Peoria & Western maintenance of way employees now have their own monthly publication. It is called "The Progressive Wayman"—a name which utilizes the road's initials, and which earned a \$25 check for L. B. Meentz, section foreman at Sheldon, Ill., who suggested it.

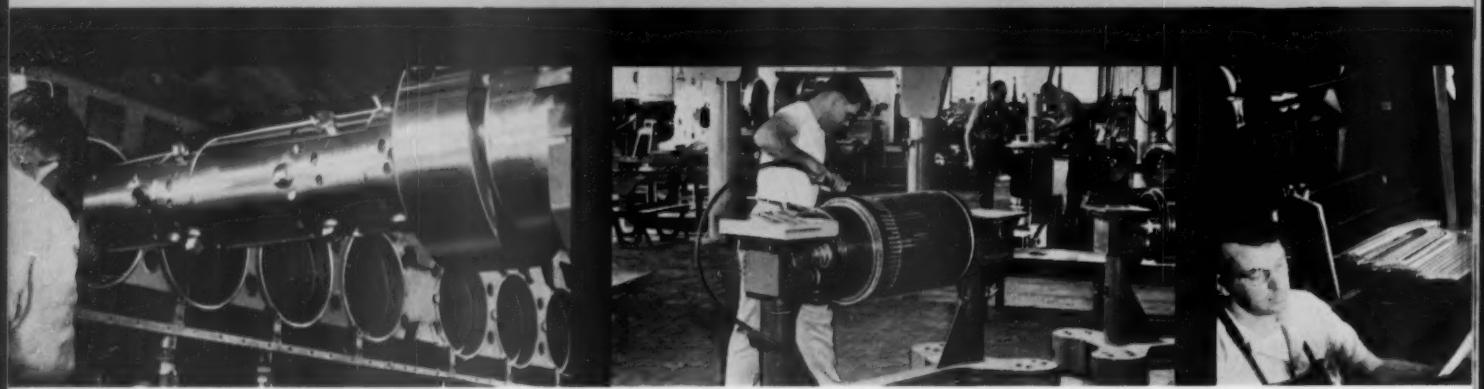
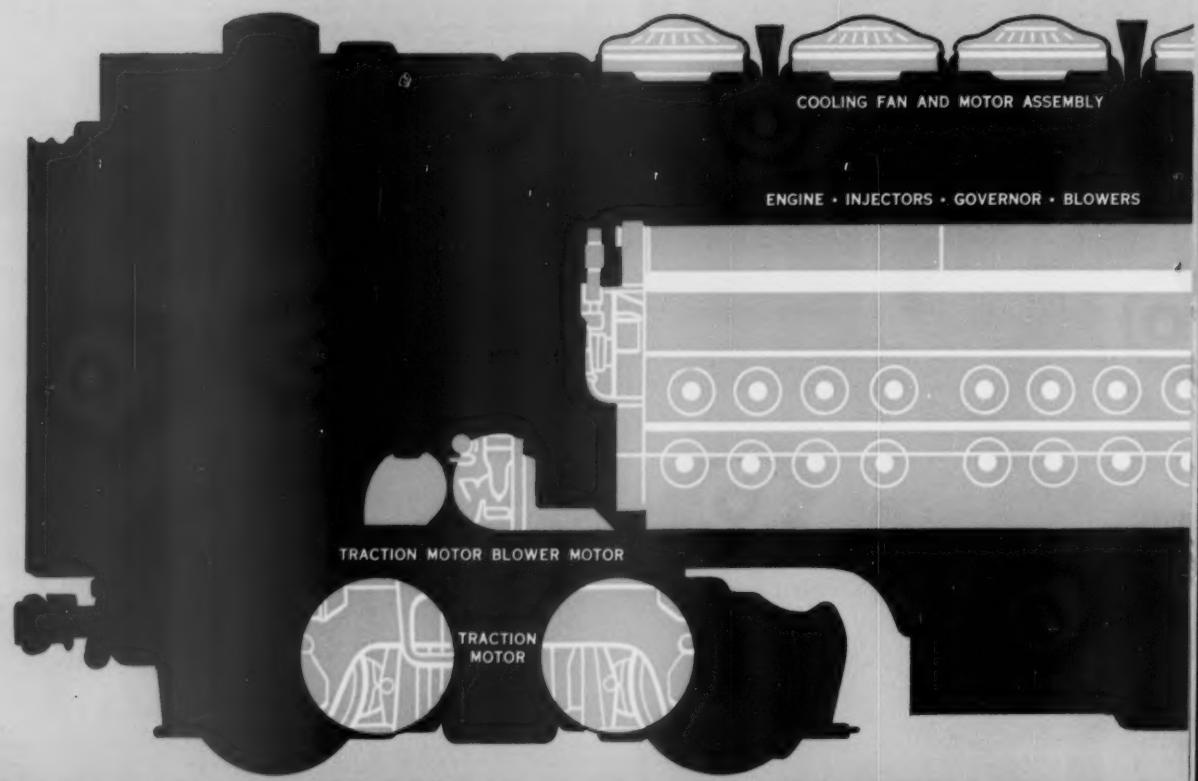


**WORKING MODEL** of the Riverlake Belt Conveyor Lines system which, if built, will transport coal and iron ore between Lake Erie and the Ohio river, via Youngstown. The model, displayed recently in Cleveland, has end panels depicting modern river and lake terminal loading and unloading. The central unit shows how elevated two-way belts would haul cargoes cross-country along a projected 100-mile route. Goodyear Tire & Rubber Co.'s Akron

model shop took six months to make the model, which will be displayed throughout Ohio in a specially built trailer with glass side. Paul M. Zeis, Riverlake vice-president in charge of research, speaking at the Cleveland display, said the conveyor line project, when coupled with the St. Lawrence Seaway, "offers the greatest stimulus to Ohio's industrial future since the early development of the state's basic steel industry."

*inside look at*

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And here, too, you see some of the machinery and methods Electro-Motive uses in remanufacturing worn components for Unit Exchange—techniques which give you better rebuilds, faster, at lower cost.

But there's more here than meets the eye—features of Unit Exchange that can mean big savings in your operating costs. For example, Electro-Motive Unit Exchange helps you

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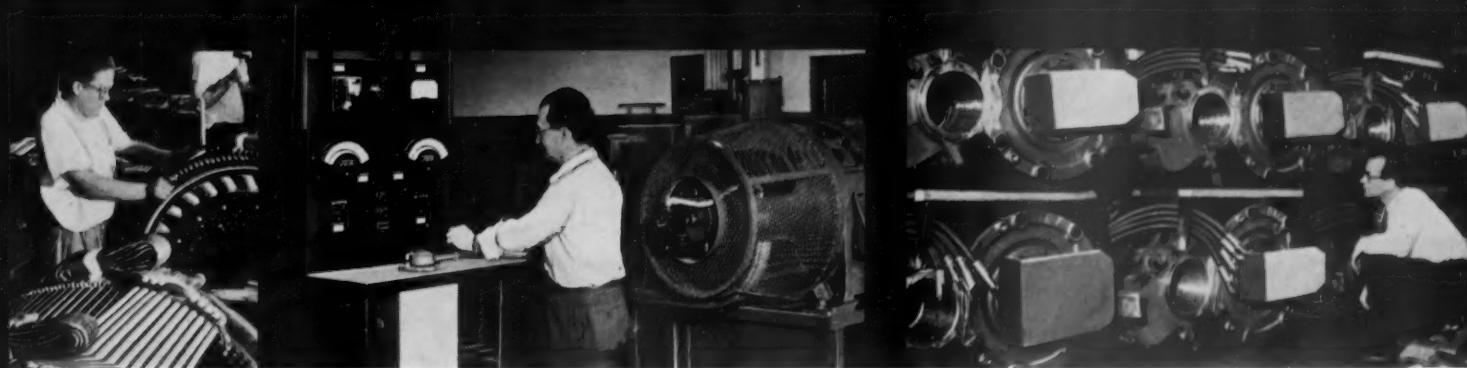
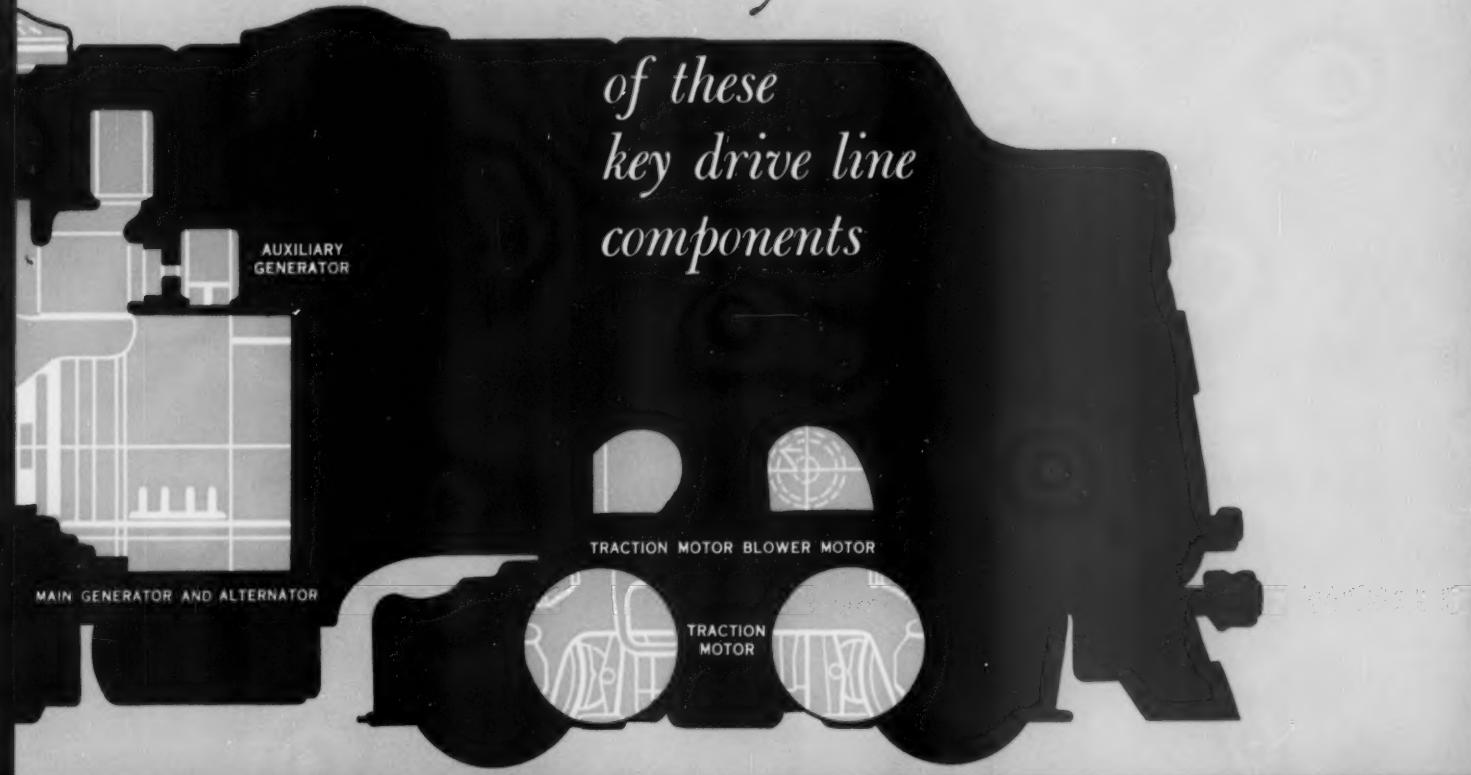
Unit Exchange also helps you reduce your component rebuilding costs because all rebuilds are billed at low, flat-rate published charges that cover everything *needed* to restore your worn units to top condition.

And you get fully modern rebuilds from Electro-Motive because we include latest improvements. For example, a

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delivery*

*of these  
key drive line  
components*



*Testing insures performance*

*We carry your spares*

worn D-27 traction motor can become a D-37 motor through EMD Unit Exchange. This means higher ratings and lower operating temperatures *plus* reduced maintenance back on the job.

What's more, Electro-Motive's investment in the machinery and equipment you see here means you can avoid

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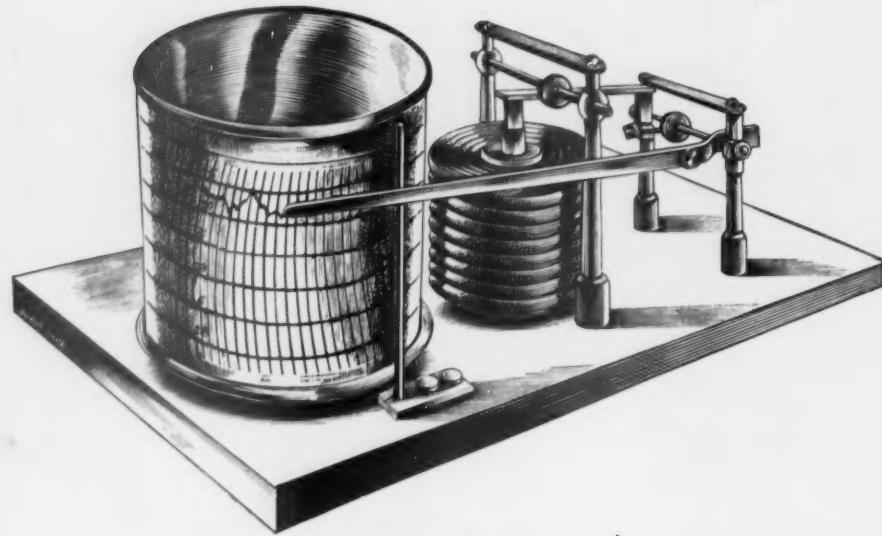
Get full details on Electro-Motive Unit Exchange from your EMD representative today—have him prove to you that *EMD Unit Exchange gives you better rebuilds, faster, at less cost.*

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Railroading is a high fixed cost business  
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Thus a car that initially bolsters profits  
but later costs money in repairs and time  
out of service finally is a lifetime loss.

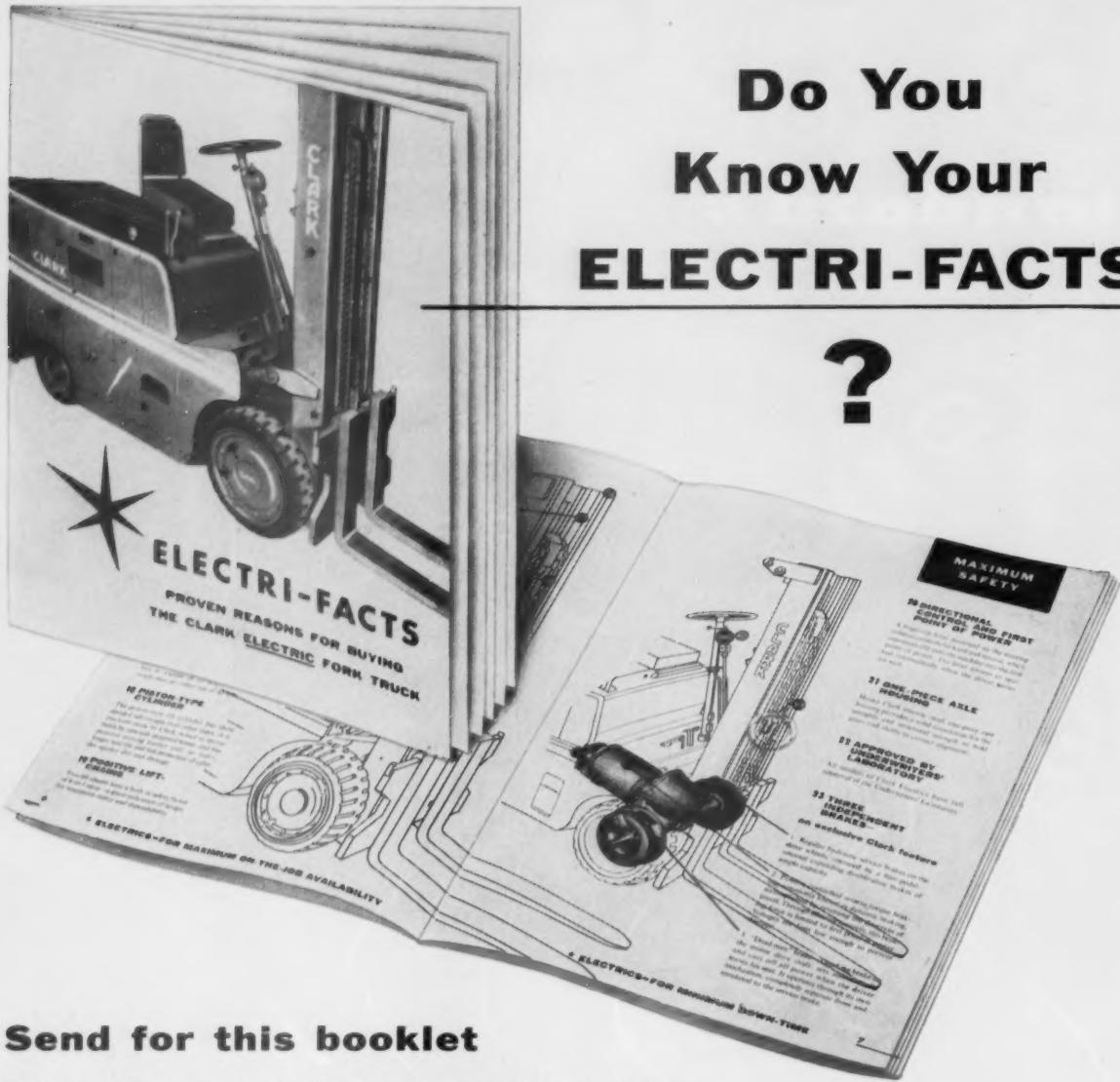
Standard components are laboratory engineered  
to keep cars on the line producing railroad profits.

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which shows and explains in detail the features of the Clark line of electric-powered lift trucks. The Electri-Facts Booklet disassembles the Clark electric truck to give you a mechanic's-eye view of all working parts—electrical control system, hydraulic system, power train, uprights, brakes, etc. Find out why Clark electrics give you better battery efficiency, why they operate a longer work-cycle than any other electric truck. Before you buy an electric truck, or any lift truck, you owe it to yourself to have the facts on Clark electrics. Use the coupon—send for your copy of ELECTRI-FACTS.

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Industrial Truck Division • CLARK EQUIPMENT COMPANY • Battle Creek 24, Michigan

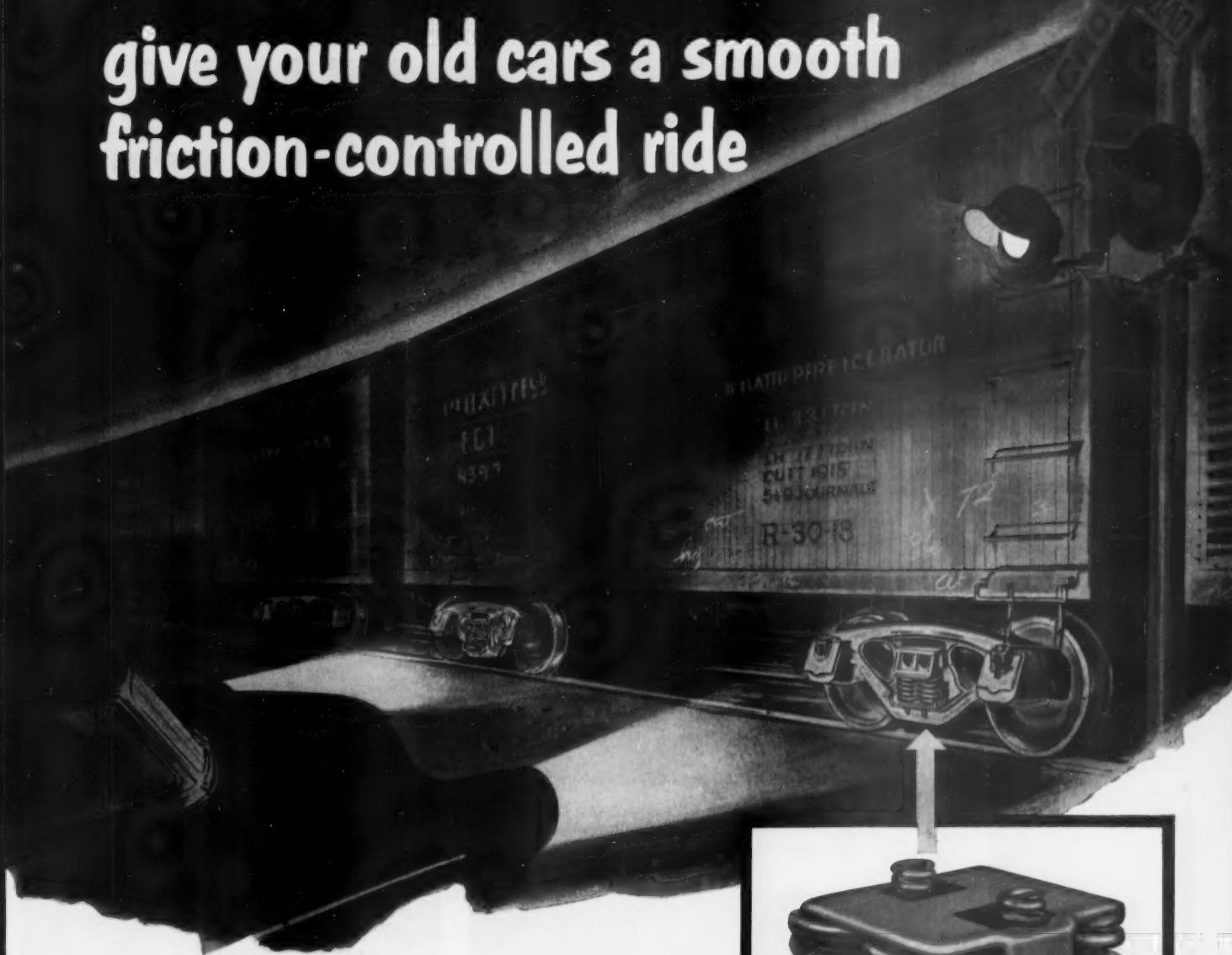
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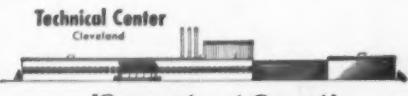
NATIONAL SNUBBER PACKAGE uses AAR Alternate Standard 2½" deflection springs (coupler still remains below maximum permissible height of 34½"). The Snubber Package is supplied without load springs, unless otherwise specified.

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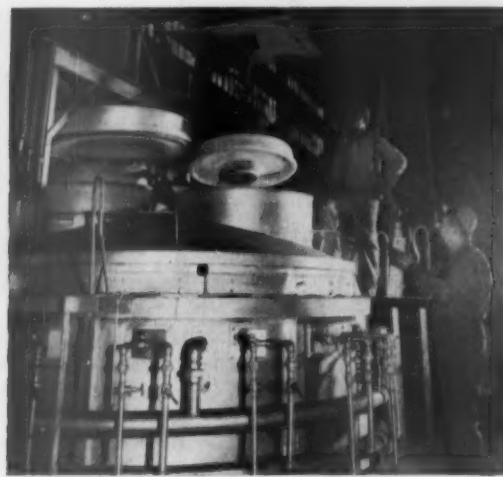
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Graphite molds, machined to extremely close tolerances, are used in producing the Griffin EQS. Note clean appearance. Special silica spray also helps give wheel its fine finish.



Pressure-pouring and electric quality steel—two significant factors that assure complete filling of the mold with steel of closely controlled analysis.



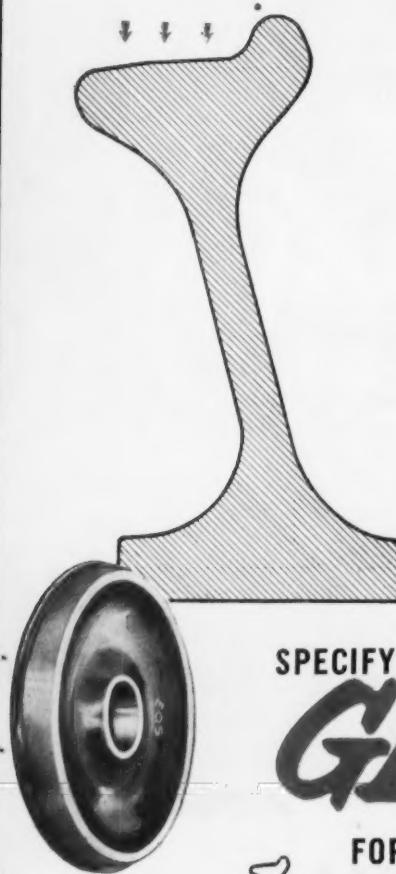
Normalizing in a temperature-controlled furnace, regulated to prevent decarburization. After removal, wheel is differentially control-cooled to room temperature.



Each Griffin EQS Steel Wheel is shot-blasted and given a 100% Magna-glo inspection. Taping for size completes its manufacture, and molds are immediately prepared for re-use.

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For Bendix fuel injection equipment is the product of an organization famous for its unique ability to combine precision engineering with quality production.

Bendix engineers are long experienced in working with diesel manufacturers from blueprint

stage to the finished product in order to accomplish the utmost in power plant efficiency.

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an all-welded underframe which  
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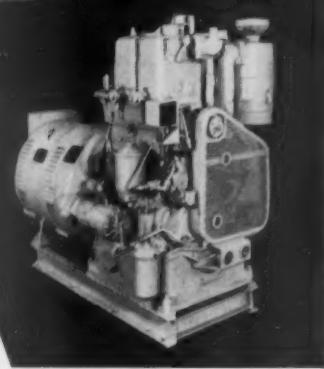
**BRAKE SHOE AND CASTINGS DIVISION**

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specially designed to  
meet power requirements  
of compact TRANE  
REFRIGERATION SYSTEM**



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Nordberg 2 and 3-cylinder Diesels are built for mechanical refrigeration systems having capacities of either 10-tons or 15-tons. Write for further details . . . and be sure to specify NORDBERG Diesels for your mechanical reefer power needs.

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Milwaukee, Wisconsin



## Current Publications

### PERIODICAL ARTICLE

HOW YOUNG GOT THE VOTES. Fortune, August 1954, pp. 87, et seq. Time, Inc., 9 Rockefeller Plaza, New York 20. Single copies, \$1.25

The new chairman of the New York Central owes his proxy victory, Fortune says, largely to "Wall Street"—which he has been lambasting for years.

### PAMPHLETS

ONLY ONE PAIR TO A CUSTOMER, by Cameron Kirk. 13 pages, drawings, cartoons. Economics Press, Inc., Montclair, N.J. 1-99 copies, 12¢. Quantity discounts.

A booklet which employers can distribute to employees telling them facts they need to know about eyes to preserve good vision. It can be individualized by imprinting company name on back cover.

SURVEY OF RAILWAY CAR REPAIR SHOPS. 27 pages. Research department, Simmons-Boardman Publishing Corporation, 30 Church St., New York 7. \$2.

Lists 1,461 car shop points where minor, medium or heavy—as well as wheel shop and passenger car—repairs are handled. Covers 121 railroads in United States, Canada and Central America.

### BOOKS

PROCEEDINGS. SPRING MEETING, RAILWAY SYSTEMS & PROCEDURES ASSOCIATION. 182 pages, illustrations. Railway Systems & Procedures Association, P. O. Box 514, New York 8. \$4.50.

This volume gives a glimpse of a broad segment of near-future railroading. Automation of much railroad clerical work, for example, is no longer merely a dream but something which can be seen. Automation will mean cost reduction for the carriers. But, more importantly, it will help to give management actual control over many areas of expenses and revenues not now well in hand.

RSPA's spring meeting dealt mainly with two complementary subjects—inventory management and data processing. Papers presented at the meeting for example, point out that:

(1) Maximum success in achieving lowest practicable inventory can be realized only if top management is behind the inventory control program and all departments actually are "in the act."

(2) Cost of paperwork relative to supply work can be cut if the following principles of integrated data processing are observed: (a) Record data at origin on machines which create automatically, as a by-product of the recording, punched cards or punched tapes; and (b) process original and subsequent data by office ma (Continued on page 34)



**POWER PACKED ACTION  
for Diesel  
Engine Starting**

# THANKS TO BATTERY POWER!



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**GOULD KATHANODES**  
with New Diamond "Z" Grids—  
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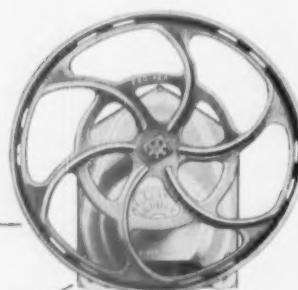
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This may be alright as a kid stunt . . . but the operation of a hand brake is a serious matter. The trainman needs both hands . . . one for operating the brake and the other for holding onto the car for his own safety.

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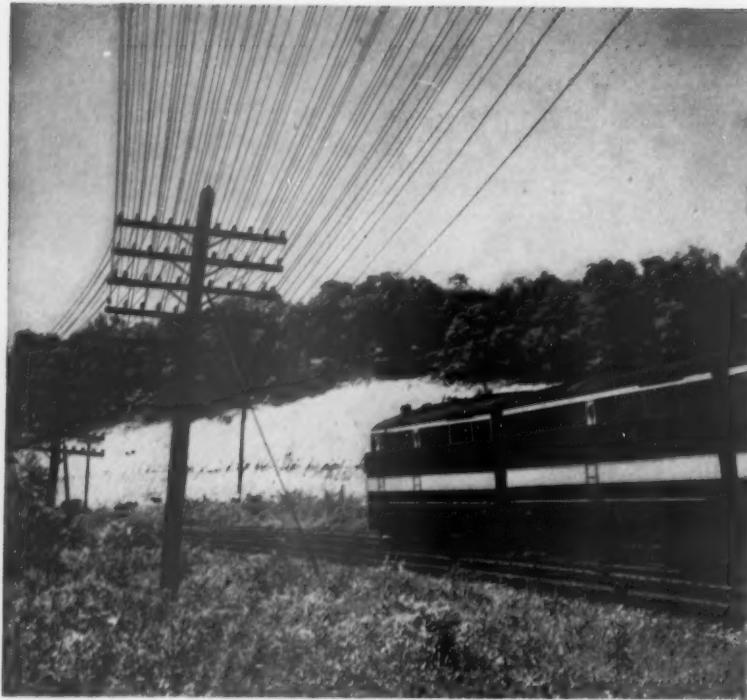
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OFFICES AND WAREHOUSES IN OVER 100 PRINCIPAL CITIES

## Current Publications

(Continued from page 30)

chines which read and punch tapes or cards.

(3) Integrated data-processing has many possible applications in railroading. Repetitive handlings of waybill information, for example, are particularly susceptible to mechanization with present-day equipment.

(4) The electronic digital computer already is helping some businesses—General Electric, for example—to process paperwork relative to inventory control, among other jobs.

(5) Operations Research can help determine the proper inventory level.

AMERICAN BUSINESS CORPORATIONS UNTIL 1860, with special reference to Massachusetts, by Edwin Merrick Dodd. 524 pages. Harvard University Press, Cambridge, Mass. \$7.50.

The growth of the business corporation in economic importance has had as its counterpart a development of American business corporation law which has made that law one of the major subdivisions of our legal order. After discussing all the important topics of corporation law in American cases up to 1830, and from 1831 to 1860, Mr. Dodd reviews the same two periods again for an entirely different purpose, considering only business corporations in Massachusetts, with emphasis on Massachusetts legislation from 1780 to 1860. Until 1851, Massachusetts business corporations were chartered by special acts of the legislature instead of incorporating, as now, under a general law, through the simple process of filing a certificate. Thus, every corporation had its own act of the legislature. In addition, there were many general laws which regulated particular businesses. Mr. Dodd discusses each class of corporation separately, with sections covering banks, insurance companies, manufacturing corporations, canals, railroads, etc. In a separate appendix the statutory regulation of turnpikes, canals and railroads in states other than Massachusetts is covered.

### ANNUALS

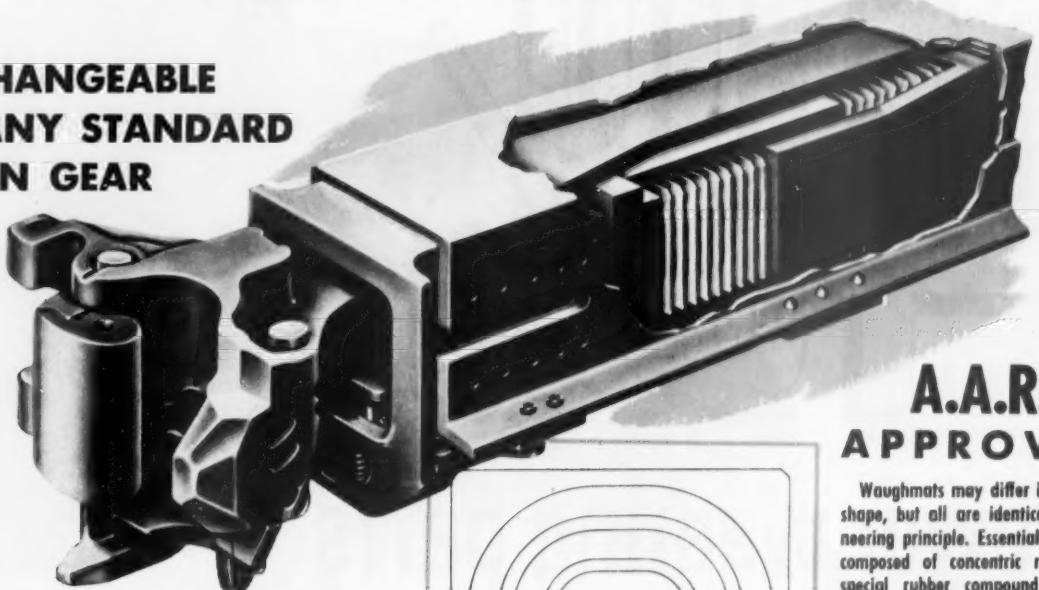
1953 BITUMINOUS COAL ANNUAL, 164 pages, illustrations, charts, tables. Bituminous Coal Institute, Southern bldg., Washington 5, D.C.

RAILROAD FACTS, 1954 Edition (Statistics for 1953). 96 pages. Association of Western Railways, Suite 1600, 105 West Adams st., Chicago 3. Free.

YEARBOOK OF RAILROAD INFORMATION, 1954 Edition. 96 pages. Eastern Railroad Presidents Conference, 143 Liberty st., New York 6. Free. Includes statistics for Eastern District roads as well as all Class I roads.

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**INTERCHANGEABLE  
WITH ANY STANDARD  
FRICTION GEAR**



Now you can replace worn friction gears with high capacity rubber gears . . . the new Waughmat Single-Action Twin Cushion. Use any standard yoke and follower block. Just replace the gear.

The Waughmat Single-Action Twin Cushion is delivered pre-compressed ready for application. Needs no jigs, jacks or special preparation.

Now, at moderate extra cost cars and lading can have the extra protection afforded by rubber cushioning — Waughmat cushioning.

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AVAILABLE CAPACITY  
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**51,600 ft. lbs.**



Cut away section of Waughmat showing holes in plate.



End view



Partly compressed under light loads.



Compressed under heavy loads.



Front Group Waughmat



Rear Group Waughmat

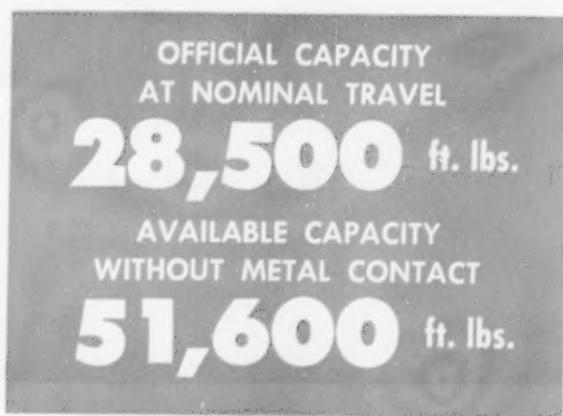
## A.A.R. APPROVED

Waughmats may differ in size and shape, but all are identical in engineering principle. Essentially, each is composed of concentric rings of a special rubber compound on both sides of a steel plate. Rings are not bonded to the plate but through the plate. The space between the rings is designed to permit the proper deformation of the rubber over the plate area when under compression.

If the rubber was in a solid slab instead of in concentric rings, the only deformation that could occur under compression would be at the outer edges, as rubber is non-compressible within itself.

Rings are bonded through the plate instead of to the plate because, if bonded to the plate, the only absorption would be the molecular friction within the rubber itself. By bonding through the plate, absorption is greatly increased due to the roll or flow of rubber over the plate surface.

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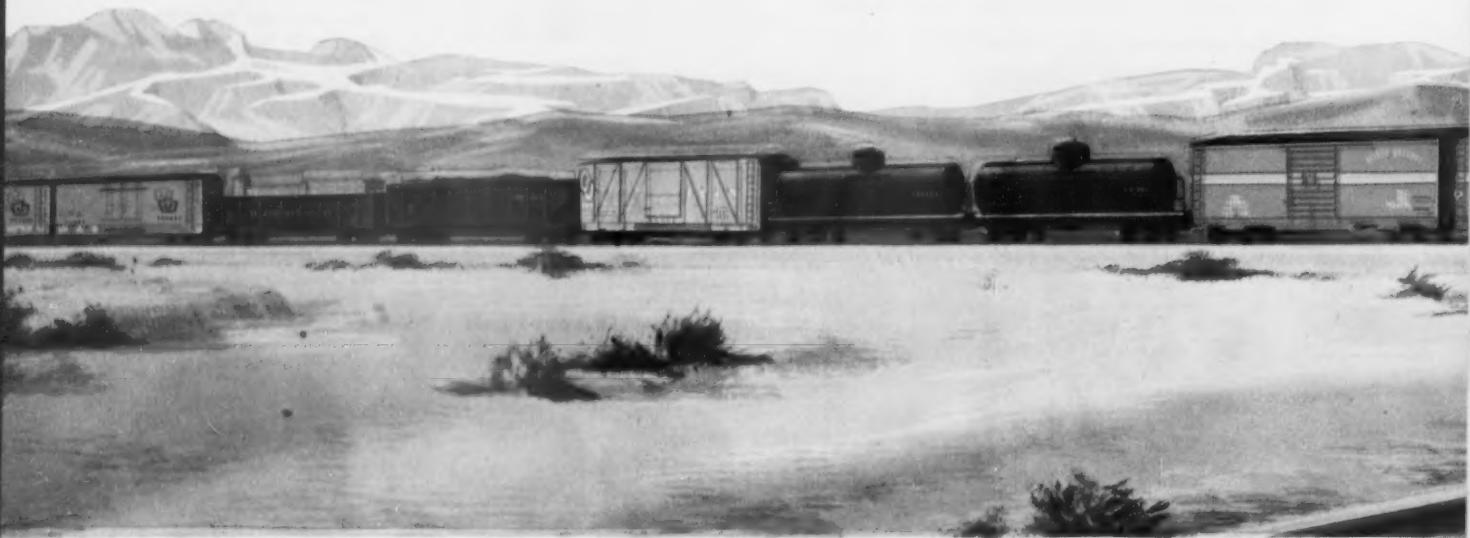
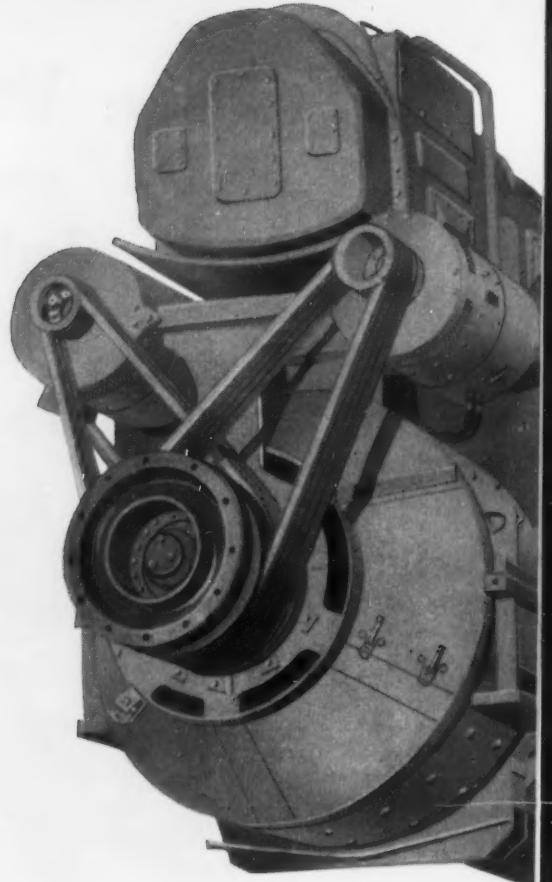
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Portrait of a man helping to reduce your operating costs!



- Sure! — he's getting a drink of water (from a crisp, clean AJAX Cup). But he's also reading the safety message imprinted on the cup.

Safety messages that get read do help reduce accidents. The National Safety Council confirms that. And you know how accidents affect your operating costs! Fewer accidents, lower costs. So . . .

*Use AJAX Cups to put your safety messages in your worker's hand* — where he'll see them several times a day, when he's relaxed, receptive, ready to read. (And he'll appreciate the comfort, convenience and complete sanitation of these crisp, clean, easy-to-drink-from AJAX Cups, too.)

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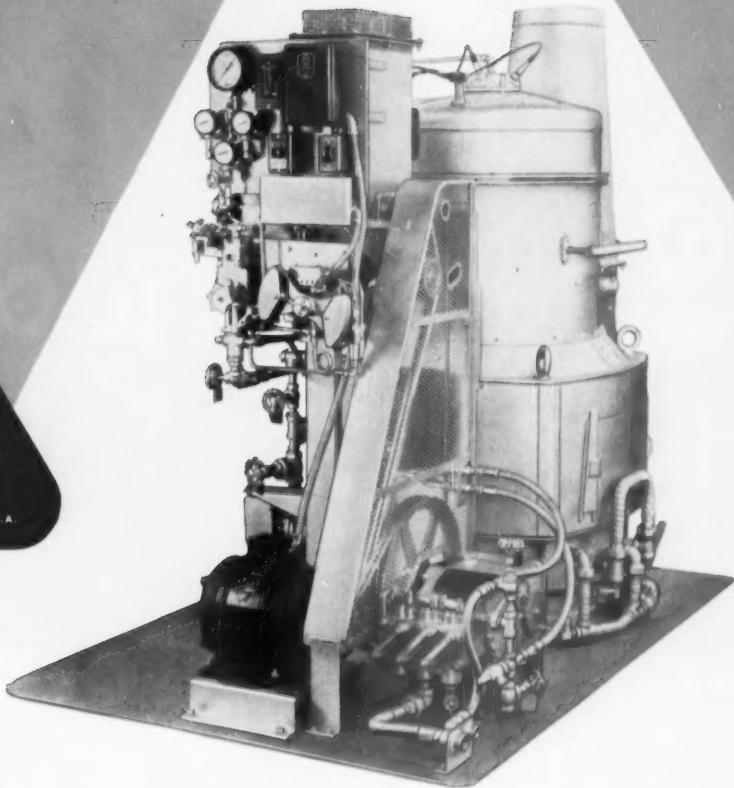
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*Designed for Industrial Service*

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It MODULATES.  
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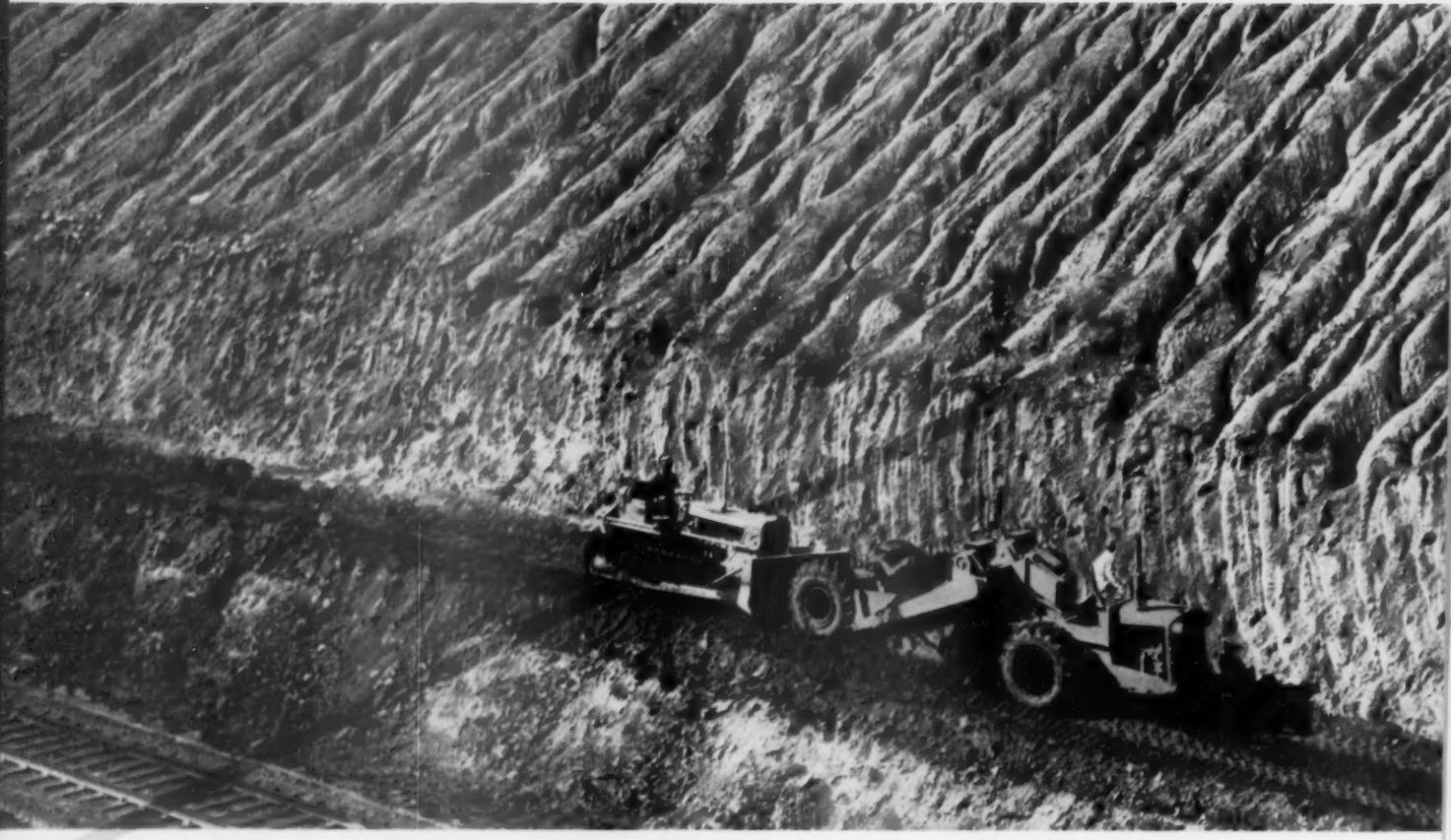
To the many railroads now using Vapor railroad-type steam generators in laundries, shops, stations, or offices . . . to all railroads operating Diesels equipped with reliable Vapor steam generators . . . Vapor announces the new Modulatic—a special development for industrial needs based upon these same unique, use-proved principles.

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# A fast solution to a common ditching



**The problem** which Toledo, Peoria and Western Railroad had on their mainline near East Peoria, Illinois, is as old as railroading itself.

The tools they used to solve it did such a good job, though, the story is well worth telling.

Near East Peoria, the T. P. & W. line cuts through a 1600' hill. Water from rain-fed springs constantly seeps out and flows down the slope. As long as a drainage ditch stays open, the water runs harmlessly alongside the tracks and off into the fields beyond. Very often, though, the ditch fills up with dirt. Or, it gets blocked by small landslides. The water then collects, seeps into the roadbed and siphons up under the tracks. The roadbed becomes springy and unstable. Ballast starts to settle and ties tend to rot in the saturated material.

T. P. & W.'s solution was to bench the hill and provide a secondary drainage ditch. Instead of handing the 15,000 yard job over to a work train crew, T. P. & W. turned it over to Contractor Roy Frietsch who drove in 2 rubber-tired D Tournapulls. These units do the same work as crawler-tractors and scrapers, only they need no train service and they do jobs much

faster. Their top speed is 28 mph, not 4, 5 or 7 mph. Their low-pressure tires do no damage to tracks and ties. They drive anywhere under their own power — along right-of-way, over highways, or across country.

Though on some jobs these 7-yarders self-load, here they were push-loaded for maximum production in heavy blue clay. In typical operation, each unit loaded with help of 93 hp crawler at east end of cut, hauled 1600' through cut, and wasted material 700' further down the track. Units then turned, drove 700' back to west end of cut, loaded with help of second crawler (76 hp), drove through cut again, and wasted material in another area. Due to narrow width of bench, units could not pass each other. No turn-around areas could be built, so cycle times were slowed considerably. Yet, job was completed in less than a month at low cost and with minimum manpower. The wet roadbed and danger of landslides was ended.

It will pay *you* to call on LeTourneau-Westinghouse machines for similar fast low-cost dirtmoving. Let us arrange a demonstration on your line so you can judge the high-speed, electric-control D Tournapull for yourself.

## FREE . . . "The Railroad Handyman"

20-page book shows how 7-yd. self-loading D Tournapull cuts time and costs on right-of-way maintenance. Send coupon for your free copy. No obligation.

Name  Title

Railroad

Address



**LeTourneau-Westinghouse Company**  
PEORIA, ILLINOIS

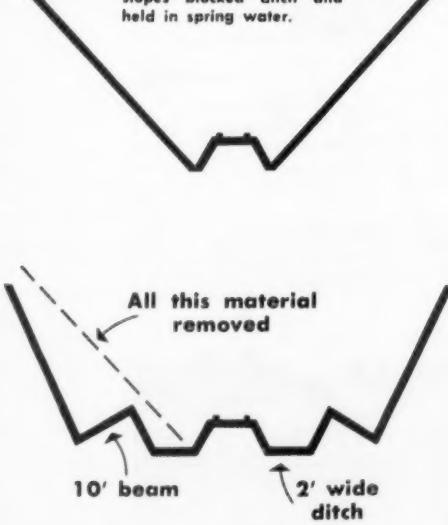
A Subsidiary of Westinghouse Air Brake Company

# problem

## How figure-8 cycles speeded the job



This is how cut originally looked. Dirt sliding down slopes blocked ditch and held in spring water.



Ditching along the 1600' cut was handled in 3 steps. First, a dozer made a rough cut along the tracks. Then a trench hoe knocked down part of the bank to provide path for scrapers. Tournapulls removed loosened material, then dug into bank to provide final grade. Scraper yardage totaled about 15,000 cubic yards.

With 76 hp tractor pushing, D Tournapulls loaded first at west end of cut, heading east. Average load in tough, water-saturated blue clay: 5 to 5½ bank yards. Load time: about 1 minute.

Once loaded, Tournapulls drove east along 1600' of finished bench. Positive power steer let units haul safely at high speeds, even though bench and "D's" were about the same width.

After driving over bench, then 700' along right-of-way, Tournapulls reached one dumping area, the low spot shown at right. Unit unloaded here, turned, and drove back to east end of cut.

At east end of cut, a 93 hp tractor push-loaded the "D's" with 5 to 5½ bank yards of sticky blue clay. "D's" at times self-loaded efficiently when pushers were busy or down for repairs.

Now the loaded Tournapull headed west along the bench to complete 2-load cycle. Bench is so narrow, the two machines could not pass each other.

To spread at this end of cycle, Tournapull had to climb 150' of steep grade. 122 horsepower, plus high-traction tires, pulled rig easily up the slope.

Load dumped, machine turns around, goes down the grade, drives to west end of cut, positions for loading — and the two-load, two-turn cycle begins anew.



# MET-L-WOOD

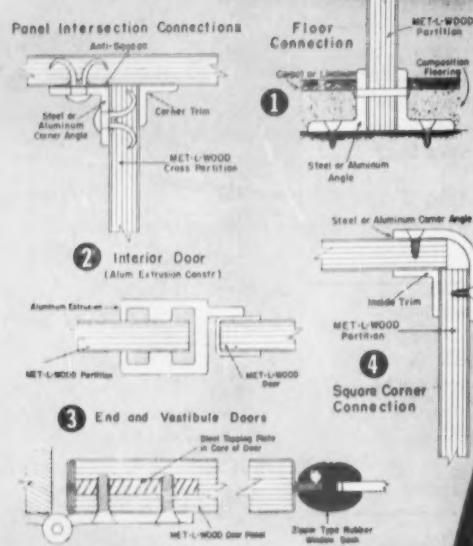
METAL BONDED TO PLYWOOD

# VERSATILITY

## FOR MODERN CAR INTERIORS



Met-L-Wood walls provide a smooth, luxurious finish in addition to saving weight and simplifying construction.



**MET-L-WOOD** passenger car partitions, doors and paneling not only produce beautiful finished surfaces, but can also save up to 73%\* in weight and a substantial amount of construction time. Shown at left, and described below are typical Met-L-Wood construction details. Full information on Met-L-Wood versatility in new or rebuilt cars will be furnished promptly on request. Write today.

① Panel intersections with Met-L-Wood can be made invisible from outside with the use of split rivets. Floor connections may be made in a variety of ways, one of which is shown here, using through-rivets and metal screws.

② Interior doors of Met-L-Wood can be fitted with aluminum extrusion door stops; or the Met-L-Wood partition formed so that the door stop is an integral part of the panel.

③ Steel tapping plate inserts can be put in Met-L-Wood doors at proper places for solidly anchoring hinges and door-opening devices. Note simplicity of using zipper-type window sash with pre-formed Met-L-Wood window openings.

④ Square or rounded corners are made with Met-L-Wood panels and steel or aluminum corner forms. Corner forms can also be fastened with split rivets or through-rivets, as well as with wood or metal screws.

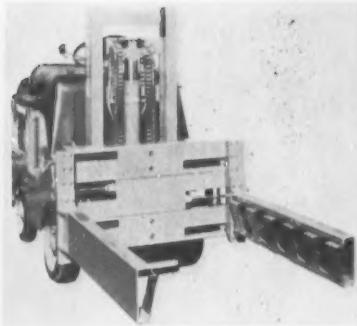
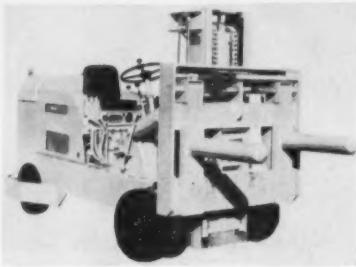
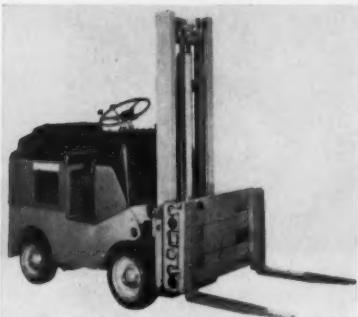
\*Met-L-Wood panels  $\frac{3}{8}$ " thick, with steel both sides, have a stiffness factor exceeding that of  $\frac{1}{4}$ " solid steel plate, while weighing only 27% as much as steel!

**MET-L-WOOD CORPORATION**

6755 West 65th Street, Chicago 38, Illinois

**MET-L-WOOD • STRONG...LIGHT...Smooth Finish...Sound Deadening...Fire-Resisting...Insulating**

## What's New in Products



**Side shifter (upper left), crate clamp (upper right), adjustable fork (lower left), twin ram (lower center) and, carton clamp attachment (lower right).**

### Accessories for Towmotor Trucks

Towmotor Corporation, 1226 East 152nd st., Cleveland 10, Ohio, has developed five new accessories for its line of fork-lift trucks. They are:

**Twin ram attachment**, for handling double loads of unwieldy "open center" material, such as coiled wire, reeled cable, paper rolls, pipe, wheel castings, etc. Movement of each ram is actuated by its own double-acting hydraulic cylinder; both are controlled by a single lever from the driver's seat. The Towmotor LT-90, illustrated, can handle, with this attachment, two

24-in. loads weighing a total of 18,000 lb, but the Twin Ram can be used also on other Towmotor truck models.

**Carton clamp attachment**, consisting of large-face, pivot-mounted arms, for transporting or high-stacking partially or fully unitized loads of cartons, cases, packages, crates, etc. Arm faces are covered with rubber coating to protect loads, and reduce pressure necessary to hold them.

**Crate clamp**, for handling various crated materials. Springs, mounted along the entire inner length of each arm of the clamp, contact cross members of crates. Where these springs

come in contact with vertical members of crates, they compress, to prevent damage either to crate or contents.

**Adjustable forks**, which adjust hydraulically from side to side, are said to speed up operations when a great variety of pallet widths has to be handled, or when a truck is used alternately as a clamp and fork truck.

**Side shifter tow-loader**, which is said to permit use of thin paper pallet sheets instead of conventional fork-entry type pallets. The driver can shift the forks for proper lifting, and can also "true up" the load before placement.

### Non-Flammable Paint Stripper

A water-rinsable, non-inflammable paint, varnish and primer remover, designated F.O.-182, has been formulated by Fine Organics, Inc., New York 2, N.Y. It is compounded for brush, dip or spray application on both horizontal and vertical surfaces. The product is said to be non-corrosive to alu-

minum and aluminum alloy, steel and magnesium alloy.

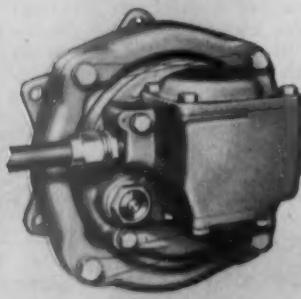
When used as specified, the liquid remover is reported not to produce vapors in concentrations to be annoying or to constitute a hazard for personnel. According to the manufacturer, it contains no abrasives, inert fillers or highly toxic materials and does not cake, clot or gel when stored in closed containers at room temperatures •

### Strong Plastic Film

A new plastic film, Mylar, developed by E. I. du Pont de Nemours & Co., Wilmington, Del., is said to combine mechanical and dielectric strength with exceptional resistance to solvents and organic and inorganic gases. Used as an electrical insulator, it is also made into thread and woven with metal to (Continued on page 45)



## Cut the cost of flat wheels with Westinghouse Decelostat® Controllers



It's hard to calculate the cost of flat wheels,  
but one thing we know: it's tremendous.  
You can cut these costs with  
Westinghouse Decelostat Controllers.

Westinghouse Air Brake  
COMPANY

AIR BRAKE DIVISION  WILMERDING, PA.

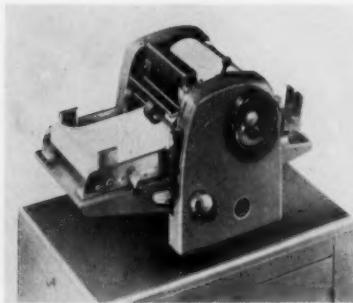
NEW MOVIE AVAILABLE entitled, "AT THIS MOMENT"—showing a vivid story of modern railroad progress. Length 26 minutes, on 16 mm. color sound film. For use of film write: United World Films, Inc., 1445 Park Ave., New York or Association Films, Inc., 347 Madison Ave., New York.

## More New Products

(Continued from page 43)  
produce brilliant fabrics suitable for drapes and hangings.

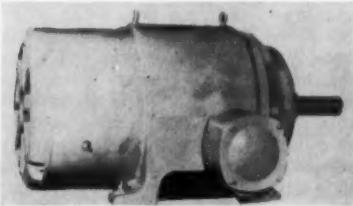
In sheet form, it is made in thicknesses from 0.00025 in. to 0.0075 in. in three types, two of which are for use as a dielectric, and one for plastic glazing and glass replacement applications.

Mylar remains flexible and stable over a range of temperatures from -60 deg C to 150 deg C. Its melting point is 250 to 255 deg C and its 60-cycle dielectric strength at 25 deg C is 4,000 volts per mil for a 2-mil thickness. Its tensile strength is 17,000 to 25,000 psi •



### Duplicating Process

A new short-run duplicating process, called Azograph, has been announced by the A. B. Dick Company, 5700 W. Touhy ave., Chicago. The Azograph process is said to produce up to 50 legible copies of documents, without staining hands, clothing or the work itself. Azograph, an aniline dye process, employs two separate color-forming compounds within the coating of the transfer sheet. These compounds cannot unite to form color until a third, a reactant in the fluid, is introduced by the duplicating machine. The reactant, a colorless fluid, is applied to blank paper as it is fed through the duplicator. As the moistened paper makes contact with images on the master which contain the color forming components, images develop in blue on the blank paper •



### Explosion-Proof Motors

Maximum ratings available of U.S. horizontal totally enclosed and explo-

sion-proof motors have been increased to 150 hp. Manufactured by U.S. Electrical Motors Inc., Los Angeles 54, Cal., the Type SD enclosed motors are designed for protection against dirt, moisture, oil and chemicals. The explosion-proof motors, Type SE, are for service where inflammable gases, volatile liquids or combustible dusts may be present.

Both type motors are double-enclosed with a built-in fan for full ventilation and greater heat dissipation. Additional features include asbestos-protected windings to withstand high

temperatures; a stator cover plate which can be removed for inspection or cleaning; dynamically balanced, cast aluminum rotor; Lubriflush bearings for relubrication without disassembly; and normalized castings for permanent machining accuracy.

Both totally enclosed and explosion-proof motors are available from 1/3 to 150 hp. They may also be supplied in combination with Varidrives when variable speeds are desired, or on Syncro-gears when geared multiplied torque is needed •

(More on next page)



**THE "WHAT"** Nearly forty steel mills, here and abroad, have purchased Differential Air Dump cars in capacities ranging from 30 to 60 cubic yards (level load).

**THE "HOW"** Massive air cylinders on both sides power the two-way, 50° dumping action. Wide spacing of fulcrums contributes to riding stability. No locking mechanism — no accidental dumping.

Down-folding doors chute the load a greater distance from track. Positive door return when car is righted. Overall rug-

gedness and simplicity of design mean minimum maintenance.

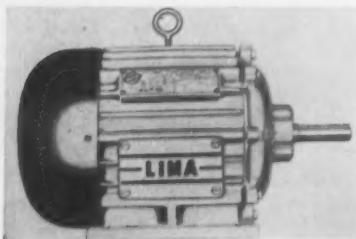
**THE "WHY"** It all adds up to a "higher ratio of payload to dead weight," superior performance — and ultimately to a prettier picture on the operating statement. That's "why" more and more steel mills have put Differential cars on their "earn-roll."

**Other Differential Products:** Locomotives, Mine Cars, Mine Supply Cars, Rock Larries, Mantrip Cars, Rotary Dumpers and other dumping devices, and Complete Haulage Systems.



SINCE 1915—PIONEERS IN HAULAGE EQUIPMENT

## More New Products



### Motors for Hazardous Locations

The Lima Electric Motor Company,

Lima, Ohio, is offering new Type EX explosion-proof motor and a Type ED dust-tight motor. The Type EX is for hazardous locations where gasoline, petroleum, naphtha, alcohols, acetone, lacquer solvent vapors and natural gas are present. Type EX is a totally enclosed, fan-cooled, explosion-proof motor for Class I Group D Service. Type ED is for use where grain dust, carbon black, coal or coke dusts exist. Type ED is totally enclosed, fan-cooled and dust-tight. Both motors are manufactured in ratings of  $\frac{3}{4}$  hp to 20 hp in NEMA frame sizes 224 to 326 inclusive, for operation on 2- or 3-phase, all commercial frequencies and voltages below 600.

The design of the Lima motor frame, incorporating deep, integrally cast fins, is said to provide extra cooling surface for rapid heat dissipation without increasing the diameter of the motor frame. A fan forces air at high velocity over the outside of the motor. The deep-drawn steel fan housing gives proper direction to this air stream resulting in a motor which, the maker states, blows itself clean continuously. If desired, under extreme conditions of dirt or silt, a broom may be used to remove heavy deposits, as all motor cooling surfaces are exposed and readily accessible. •

## "SPECIAL"

### DEPRESSED CENTER FLAT CAR FOR UNION ELECTRIC CO.

"Special" cars for industrial requirements are standard procedure here at Thrall. At the same time, "Standard" cars for interchange service benefit from special custom shop construction at interesting prices. How can we offer an attractive proposition on both? Flexible production facilities, plus 38 years of developing them, pretty well sum it up.

Special 150 ton capacity depressed center car having 7 x 14" journals. One piece cast steel underframe.



Write for our booklet  
"Cost-cutting Customs on  
'Customs'." It shows what  
Thrall can do for you on Spe-  
cial or Standard cars, recon-  
ditioned or leased cars.

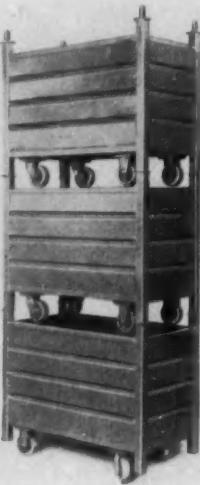
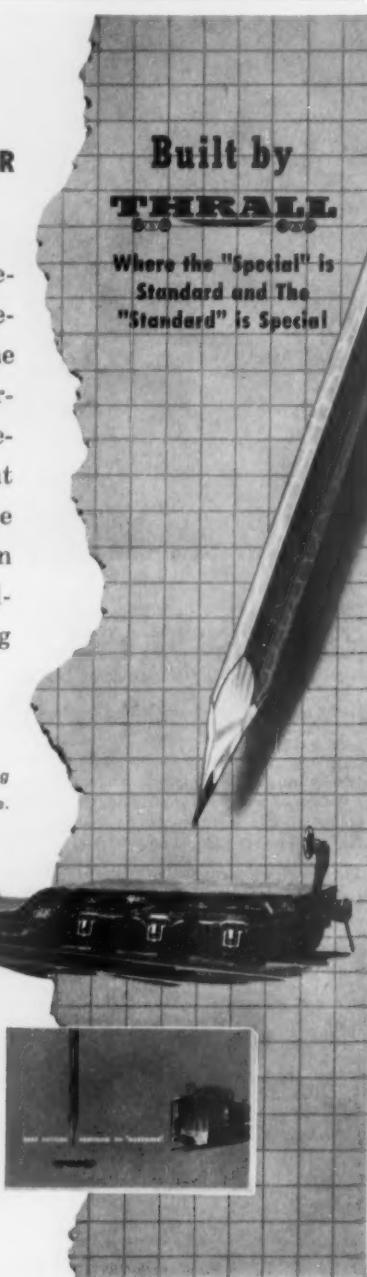
**THRALL**  
CAR MANUFACTURING COMPANY

2602 Wallace St.,  
Chicago Heights, Illinois

Built by

**THRALL**

Where the "Special" is  
Standard and The  
"Standard" is Special



### Stacking Box Trucks

Heavy duty stacking box trucks of two-ton capacity are manufactured by the Rack Engineering Company, Connellsville, Pa. Of welded steel construction, the units are designed to facilitate storage and production operations involving small parts or bulk material. Square tubular uprights with nesting caps offer maximum strength for safe stacking. •

### Fire Extinguisher Cart

A rubber-tired ball bearing cart, known as Pull-it, has been designed by the Ansul Chemical Company, Marietta, Wis., to transport the firm's dry chemical fire extinguishers quickly to the scene of a fire. Particularly suitable where fire hazards are dispersed over large areas, Pull-it can easily maneuver between narrow aisles. The 30-lb extinguisher mounted on the unit can be equipped with 6 ft of rubber hose, permitting operation of the extinguisher from the cart. Pull-it is 44 in. high, 16 in. wide, 13 in. deep and weighs 16 lb net. •

from the  
**FIRST**

to the  
**LATEST**



**A**ll of the Burlington's  
famous Zephyrs  
have been lubricated by...

**STANDARD'S**  
Diesel Lubricating Oils

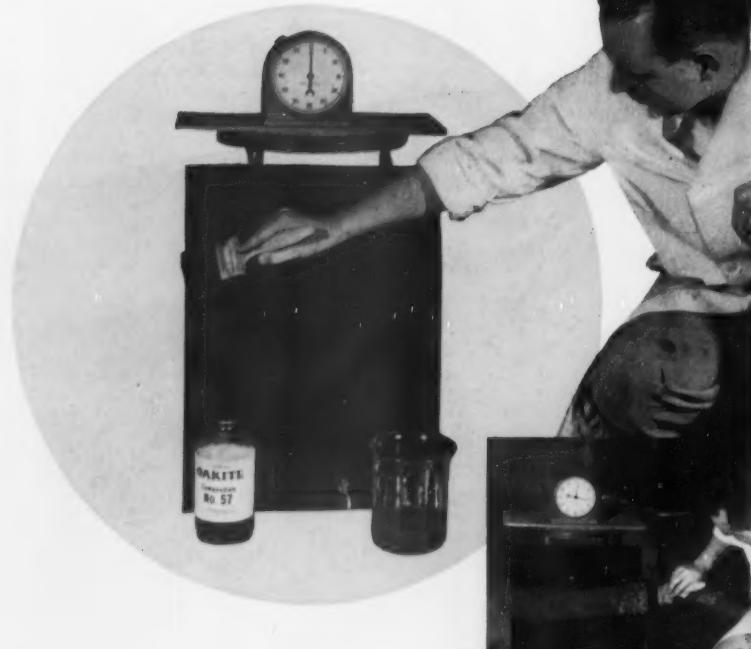
The fact that the twenty-year old Pioneer Zephyr is still in daily operation on important runs is a tribute to the sturdiness and efficiency of the railway diesel. It is a tribute, too, to the skill and foresight of the men who plan and carry out Burlington's maintenance program.

We like to think that it also speaks volumes for the high quality of Standard Diesel Oil which has lubricated the Pioneer and all other Zephyrs throughout this twenty-year period.

**STANDARD OIL COMPANY (Indiana)**



# Strip Paint with a Brush



Take a stop watch in one hand and a brush full of Oakite Composition No. 57 in the other and see for yourself how this amazing new paint stripper goes to work in seconds . . . practically lifting the paint behind the brush.

See how Oakite Composition No. 57, paint stripper extraordinary, clings to vertical and inverted surfaces, eliminating costly waste. How easily loosened paint rinses away with water pressure spray.

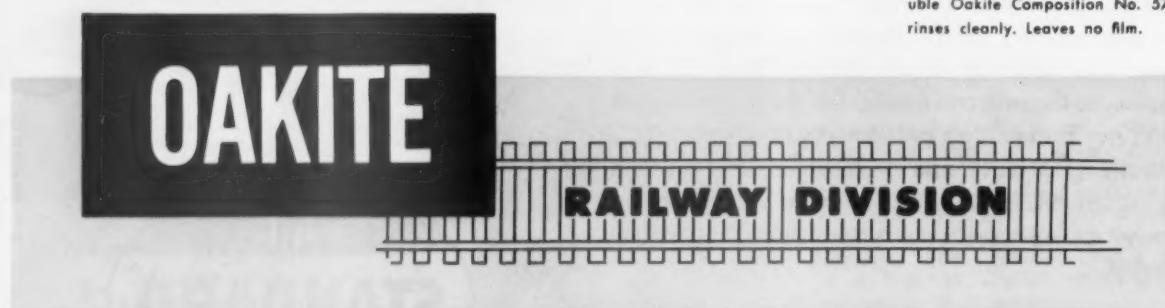
Oakite Composition No. 57 is tops for removing those tough alkaline resistant paints from surfaces that just can't be dip-stripped. Get the full story today by writing for Special Report B-2415 and the Paint Stripping Handbook F-7893. Both FREE. Write Oakite Products, Inc., 46 Rector Street, New York 6, N. Y.

**OAKITE PRODUCTS, INC., 46 Rector Street, NEW YORK 6, N. Y.**  
*In Canada: Oakite Products of Canada, Ltd. 65 Front St. East, Toronto, Ont.*

Just 77 seconds later. Paint is completely loose—ready to rinse.



After pressure rinse. Water-soluble Oakite Composition No. 57 rinses cleanly. Leaves no film.



# THE ENGINEER'S REPORT

## DATA

LUBRICANT	<i>Calol Rail + Flange Lubricant</i>
LUBRICATOR	<i>Mechanical</i>
LOCATION	<i>California + Oregon</i>
CONDITION	<i>Ambient temp. -20° F. to 110° F. Continuous use</i>
TEST PERIOD	<i>10 months</i>

## New rail-flange lubricant meets toughest conditions!

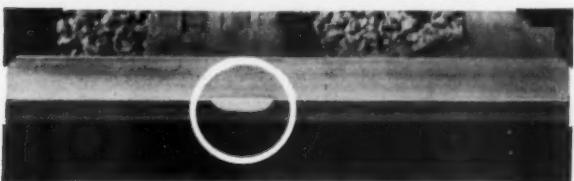
CALOL RAIL AND FLANGE LUBRICANT, tested continuously for 10 months at six locations on a major western railroad, proved entirely satisfactory. Although air temperatures ranged from 20 below zero to 110 above, the lubricant retained correct consistency for good pumpability both in storage and lubricators. Grease buttons on wiping bars remained in position even in direct sunlight. Coverage was excellent, as demonstrated by photographs below of rails at successive curves serviced by the lubricator shown at right.



FILM OF CALOL RAIL & FLANGE LUBRICANT at first curve. Circled area is wiped clean for contrast.



FILM OF LUBRICANT on second curve from lubricator.



THIRD CURVE. Note grease is still well distributed.

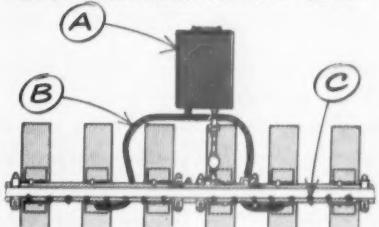


FREE CATALOG: "How to Save Money on Equipment Operation," a new booklet full of valuable information, will be sent you on request to Standard Oil Company of California, 225 Bush St., San Francisco, Calif.

TRADEMARK "CALOL" REG. U.S. PAT. OFF.



### How Calol Rail and Flange Lubricant Cuts Track Maintenance Costs



- A. Stable in use and storage—will not separate, "bleed" or harden.
- B. Pumps freely from lubricators from below zero temperatures to over 100 degrees. Retains even consistency.
- C. Forms stable buttons which resist high temperatures. Very adhesive—carries for long distance on rails. Resists tendency to pull over tops of rails.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.



**STANDARD OIL COMPANY OF CALIFORNIA**, San Francisco 20 • **STANDARD OIL COMPANY OF TEXAS**, El Paso  
**THE CALIFORNIA OIL COMPANY**, Barber, New Jersey • **THE CALIFORNIA COMPANY**, Denver 1, Colorado

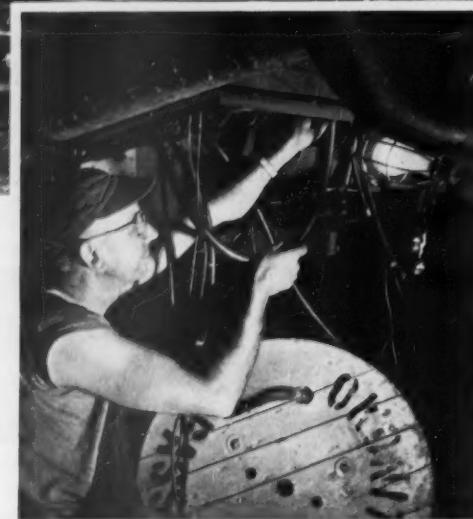


The Budd-built new full-length dome lounge car sets a new standard in railroad luxury.

## 119 new Santa Fe cars wired with OKONITE-OKOPRENE

Expanding its famous high-quality service, the Santa Fe is adding 119 new Budd cars to the El Capitan, Chicagoan, Kansas Cityan and the new San Francisco Chief. The coaches, baggage and mail cars, and the full-length dome lounge cars are all wired with Okonite-Okoprene, the service-proved quality car wire.

Unique electrically operated features make the new two-level lounge cars the height of luxury. The upper lounge service bar is supplied by means of an electric dumbwaiter. Indirectly illuminated table tops give soft lighting; the upper level "Starlite" lighting system does not obscure outdoor views. Heating and air conditioning, carefully planned by Budd



engineers, make the interior completely climate controlled. Electric power for the full-length dome cars is supplied by a 40-kw. 220-volt, three-phase, a-c, diesel-driven generator.

Santa Fe and over 100 other Class I roads use Okonite-Okoprene cables in their systems for yard wiring, signal circuits and diesel electric locomotive wire, in addition to car wire. The composite mold-cured insulation and sheath provides the electrical strength and mechanical toughness that has given this construction its reputation of service proved reliability. Ask your Okonite representative for information on Okonite-Okoprene, or write for Bulletin RA-1078 to The Okonite Company, Passaic, N.J.



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## Symes Prescribes for The PRR and the Industry

President J. M. Symes of the Pennsylvania made a speech recently to a meeting of 700 PRR supervisory people and union chairmen—in which he outlined, with great candor and courage, the difficulties of that railroad and of the railroad industry; and the program he proposes for overcoming these difficulties. The talk in its entirety was published in the July-August issue of the company's magazine, *The Pennsy*, from which the following extracts are made:

"We have our problems before us—and it is my opinion that they are more serious than ever before. But we have had problems in the past and solved them. . . . During the short span of 38 years that I have been associated with this industry, I have seen all kinds of problems—boom times and war years with traffic beyond our economical capacity to handle—depression times and peace years when much of our plant and equipment was in mothballs. . . .

"Before I get into a discussion of some of our immediate and long-range objectives, I want to tell you that they will all be pointed to one common goal—and that is to again make the Pennsylvania Railroad not only in name, but in fact, 'The Standard Railroad of the World.' . . . As you look back over the years you will find that we pioneered and led the field in [many] things. . . .

"We must again pioneer in these many fields of endeavor and *not follow* but *lead* in their development. So, to become recognized as 'The Standard Railroad of the World,' will involve:

- Continuation of the 'bigness' we already have—but regardless of that 'bigness,' a service that is more 'individualized' than is being done on the smaller competitive properties. This means organization, and delegation and decentralization of authority. All of us must assume our full share of initiative and responsibilities.

- The adoption of bold experimentation plans designed to promote and take advantage of technological improvements and innovations of service that will provide a better and more economical transportation service than can be accomplished by our competition. This will also take courage and initiative on the part of all of us.

- A more modern and aggressive solicitation and marketing program, designed to attract more business in such volume that it can be produced at a profit.

"Many changes have taken place since the actual construction of our railroad. There have been changes in the flow of traffic, brought about by certain economic conditions, and the development of technological improvements has substantially changed our methods of operation. . . . In many places we find too much railroad for the business being done—other places, too little railroad. . . . We must

provide our customers with the things they need and will use, and not attempt to have our customers pattern their requirements into what we have. . . .

"The next subject for discussion is the matter of subsidized competition. [Mr. Symes here quoted the National Transportation Policy as set forth in the preamble of the Interstate Commerce Act.] We should all memorize that short statement of policy—that so clearly and intelligently defines what ought to be the objective of all. Enforcement of that declared policy, by appropriate legislation, is perhaps the most important thing needed to revive our railroad and the industry as a whole. . . .

"That might take a long time to accomplish—and we can't sit back and wait for it to happen. We must move quickly and begin immediately to share in a larger proportion of the country's transportation requirements regardless of handicaps. This we intend to do. We expect to commercialize our rates to a greater degree than ever. By commercialization of rates, I mean a structure that will make us truly competitive regardless of subsidy; and then go out and get the business. . . . We want passenger business—all we can get. . . .

"Men no better than the men we have now—men who did not have the advantages of the kind of plant and equipment we have now—made the Pennsylvania the 'Standard Railroad of the World.' . . . I am certain that we, working as a team, can again make the Pennsylvania the 'Standard Railroad of the World.' "

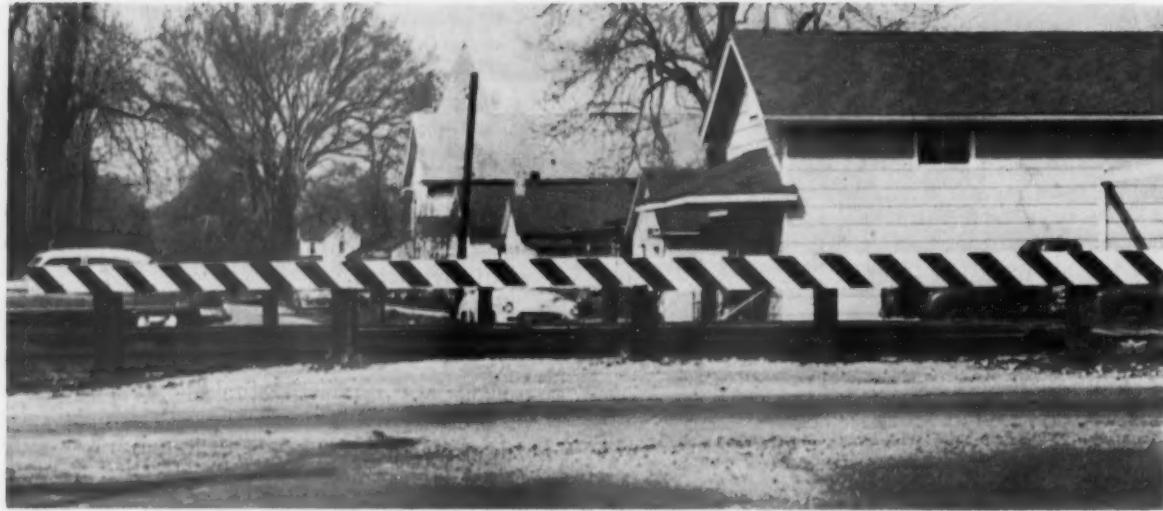
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While there may be some railroad men who will not share all of Mr. Symes' enthusiasm for his own particular railroad—there will be few of them indeed who will not go along with him in most of his objectives, for the industry as a whole. The strongest part of his whole statement, of course, is the credence it invites by the admission of some weaknesses in the railroad position—occasionally inferior service, an outmoded rate structure, and facilities not always adapted to present-day needs.

Mr. Symes' opinions are in most respects substantially parallel to those often set forth in this space—namely, that the situation of the railroads is serious and even critical; but, that, nevertheless, this unfavorable situation can and will be quickly and thoroughly corrected by appropriate managerial policies. Many of the railroads' difficulties are external (e.g., subsidized competition) and cannot be corrected without "outside" help. However, there are many things the railroads can do by means of service and rates, which need not await the correction of these external handicaps. Probably one of the best arguments for removal of some of these external burdens is for the railroads to do the very best they can with what they have. The Lord still helps those who do the best they can to help themselves.



## Gates at Three Crossings



## Barriers at Four

At Auburn, Ill., four crossings were abolished when GM&O installed automatic gates at three crossings, thereby replacing part-time watchmen, flashing-light signals and wigwags

Improved protection and safety at all street crossings on the double-track main line of the Gulf, Mobile & Ohio in Auburn, Ill., has been accomplished by a program planned in cooperation with local authorities, and carried to completion by the railroad. A town of 2,000 population, Auburn is 15 miles south of Springfield on the main line between Chicago and St. Louis. In this territory the GM&O operates ten passenger trains and six through freight trains daily, with a local freight running northward three days, and running southward three days during each week.

There were seven crossings in Auburn. At Jackson street, a through highway, automatic flashing-light signals were in service, and at Harrison street an automatic wig-wag signal was in service. At Madison and Washington streets crossings watchmen were on duty ten hours each day. The remaining three crossings were protected by standard crossbuck signs.

A careful analysis was made of the street traffic over the railroad crossings, with respect to the locations of schools, churches, business houses, and residential sections.

This study showed that a large percentage of the street traffic was being routed over only three crossings, Madison, Washington and Jackson, and that the remaining street traffic could be routed over these crossings with very little inconvenience or delay. The solution therefore was to install full automatic protection, including gates and flashing-light signals, at Madison, Washington and Jackson, and to abolish the four remaining highway crossings.

This program was carried to completion, with the following benefits: (1) No unprotected crossings in Auburn; (2) dependable 24-hour protection at all crossings now used by street traffic; (3) uniform and most effective type of protection; (4) increased safety for vehicles and pedestrian traffic, as well as for trains; and (5) reduction in operating expenses.

### Selective Speed Control

Through passenger trains do not stop at Auburn, and schedules provide for 75-mph maximum speed. Through freight trains operate through Auburn at a speed of about 50 mph.

The local freights stop and switch cars in Auburn. The gates and flashing-light signals are controlled automatically by trains when they occupy approach circuits, which are arranged so that 25 seconds before the fastest train arrives at a crossing, the flashing-light signals and bell will function for a warning period of approximately 6 seconds, after which the gates are lowered in about 12 seconds. Gates are down 7 seconds before arrival of the fastest train at a crossing.

In a similar project undertaken by the GM&O at Lincoln, Ill., in 1939, gates were installed at seven crossings, and seven were closed. In the 10 years prior to this improvement, 26 persons were killed and 24 injured at these crossings in Lincoln, whereas none was killed or injured in the 10 years after the new protection was placed in service.

Special selective speed controls were installed, so that if trains are operating at slower speeds, or are reducing speed prepared to stop, the crossing protection will not operate to obstruct street traffic any longer than necessary.

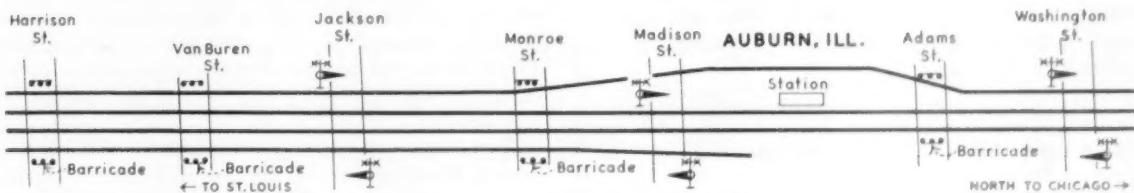
If a local train making a switching move stops on an approach control section for more than 45 seconds, the gates will be raised and the flashing-light signal cut out to permit street traffic to move over the crossings. When the train again moves toward the crossing the gates will go down again.

### Manual Control Provided

None of these automatic cutouts is effective when a train occupies short track circuits close to the crossings. When a train must occupy one of these short track circuits for an undue period of time, a trainman can operate a switch-key controller at the crossing to raise the gates. Removal of the key or departure of the train will restore the automatic control of the highway crossing protection.

The book of rules includes Operating Rule 103(a) reading as follows: "When train stops within operating limits of automatic gates, flasher light signals, or other automatic warning devices, when moving forward after stopping within such limits, train or engine must not exceed a speed of 5 mph until engine or first car has passed over protected crossing."

This crossing protection project was planned and installed by GM&O forces under the direction of H. C. Sampson, superintendent of signals; the relays were furnished by the General Railway Signal Company, and the gates and flashing-light signals by the Western Railroad Supply Company.



# How to Rate Diesel Locomotives

Factors affecting train tonnages are assessed and a graphic technique described for establishing loadings over complex profiles

Locomotive tonnage ratings, properly established and enforced, assist greatly in obtaining a smooth pattern of locomotive and train operation. The rating for a particular locomotive is the maximum train load it can haul over a given district within an allotted running time and its capacity on the ruling grade, adjusted for contingencies and if necessary for braking capacity and car limits.

This discussion is concerned with rating computation for diesel-electric locomotives and is confined to the principal factors, running time and hauling capacity. The techniques described are of particular assistance in voluminous tonnage-rating work because all intermediate manipulations of tractive force and frictional values are eliminated after drawing the proper curves. The methods are of real value in setting up preliminary ratings and in supplementing field checks to establish final ratings. For simplicity, adjusting tonnages by car factors is not considered.

## I. Simplified Grade Situations

First to be considered are grade systems simple enough not to require detailed calculations involving acceleration and deceleration. Curves showing the relation between speed, grade, and tonnage are useful in these situations. The solid-line curves of Fig. 1 illustrate this relation for a 3,000-hp diesel locomotive hauling 50-ton average freight cars. It is desirable to have available a set of these for each locomotive class, consisting of separate graphs for the average and extreme car weights encountered—for example 20-, 50-, and 80-ton cars. One graph—preferably that for 50-ton cars—may contain deceleration distances on uniform grades (indicated by the broken-line curves of Fig. 1). The two types of curves may be collectively termed “trailing load” curves. They are derived from tractive force-speed relations and Davis formula frictional values.

It is convenient first to determine the hauling capacity on the ruling grade. This is the tonnage fixed by (a) the maximum tractive force or (b) minimum speed permissible on that grade.

Grade values for the simple cases considered here usually are scanned from profile and alinement charts. The rating speed depends on one of several considerations:

(1) *Short-time overload limits* of locomotive electric drive. These are stated in terms of loadmeter current, bearing a direct relation to tractive force and consequently to speed. The overload-speed relation may be applied to a chart as in Fig. 2.

This article is adapted from a paper presented at the eighth Pan American Railway Congress by P. R. Mueller, special engineer of the Baltimore & Ohio.

(2) *Adhesive limit* between drivers and rail. On long grades the average balance speed should not require a related tractive force exceeding 18 per cent of weight on drivers. Under one-half mile values, up to 20 or 21 per cent often may be used. For starting the maximum adhesion assumed should be 25 per cent. An adhesion-speed curve, at full locomotive power, is shown in Fig. 2 on the opposite page.

(3) *Long grades* on which minimum speeds are established to minimize delays to other trains.

**Problem 1** herewith illustrates the case where minimum speed is established by short-time overload limit for a diesel-electric locomotive.

The hauling capacity determined in Problem 1 is checked in **Problem 2** for the effect of a momentum grade in the same district. The deceleration-distance curves of Fig. 1 are used with that in Fig. 3, showing how speed drops as these distances are consumed.

The deceleration curves also may be used to estimate how much overload distances on grades may be reduced because of favorable approach speeds. It is cautioned when these curves indicate minimum speeds in the critical zone, before the entire distance to balance speed is used, that a more detailed inertia calculation be made in which train length is accounted for as outlined in later discussion.

**Problem 3** illustrates how approximate starting tonnages may be estimated from trailing load curves. Grade values used are equivalent to the actual grade plus an adjustment for starting resistance.

The solution of Problem 3 is simplified by excluding consideration of allowable time operated at high starting currents. Some manufacturers' instructions permit starting currents to exceed maximum published limits provided they fall back soon after each throttle advance. Where high currents persist for several minutes and specific instructions are lacking, overloads should not be permitted to exceed allowable values obtained by conservative projection of the limits specified.

The actual rating is often set lower than the hauling capacity in order not to exceed allotted time over the entire district. This is frequently done for scheduled trains and sometimes for slow freight runs where dispatchers must count on practicable maximum, though unpublished, running times.

The reduced ratings often may be related to those for existing power. If available, trailing-load curves for the existing classes will quickly indicate probable speeds for trains at rated tonnage over selected long grades. These speeds can be used for the same grades on the curves for the proposed power to find the tonnage ratings desired.

Occasionally an actual check of running times is warranted. **Problem 4** and the recorded tabular solution

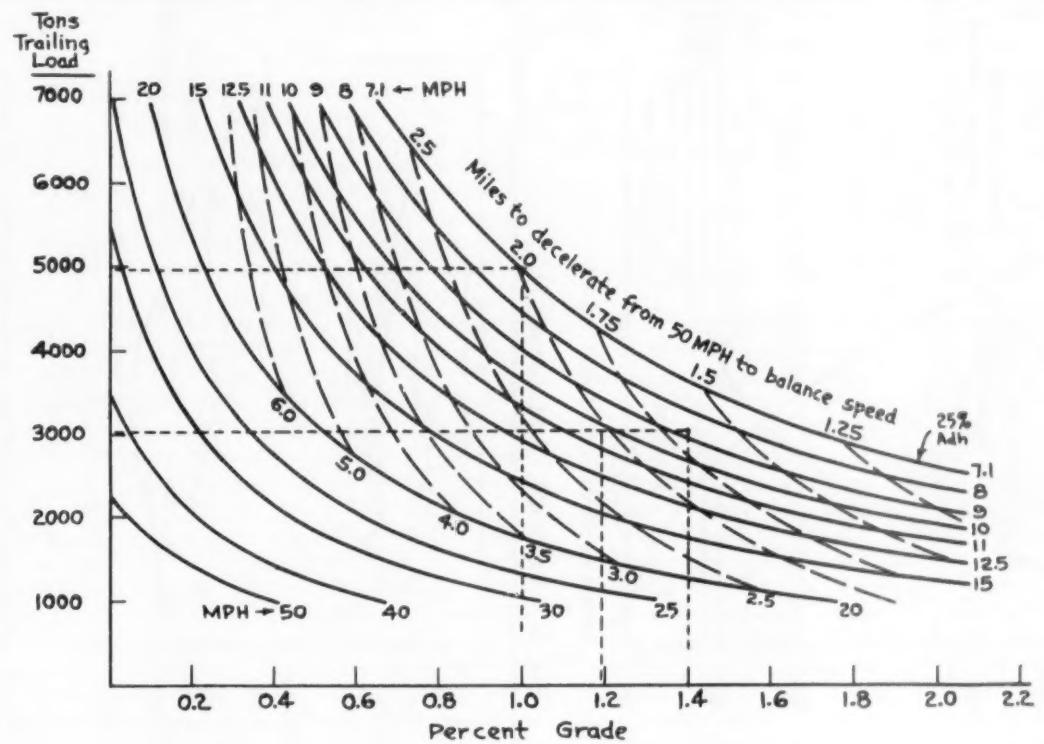


Fig. 1—Trailing-load curves for one 3000 HP diesel-elec. locomotive hauling 50 ton freight cars.

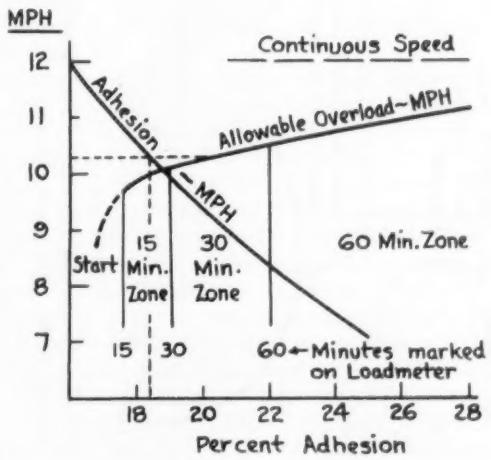


Fig. 2—Short time traction ratings and full load adhesion between drivers and rail.

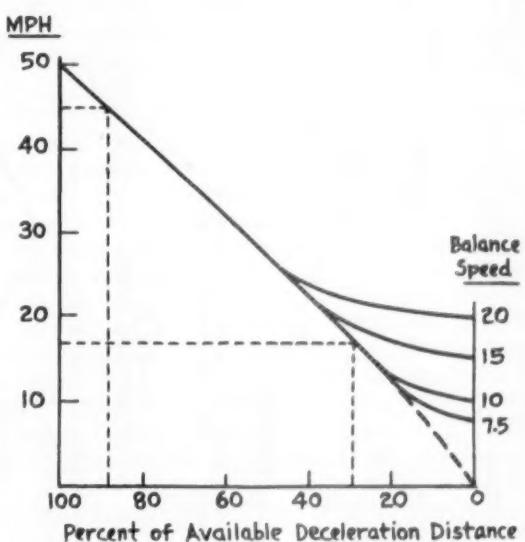


Fig. 3—Curve showing relative distance traversed as the train decelerates.

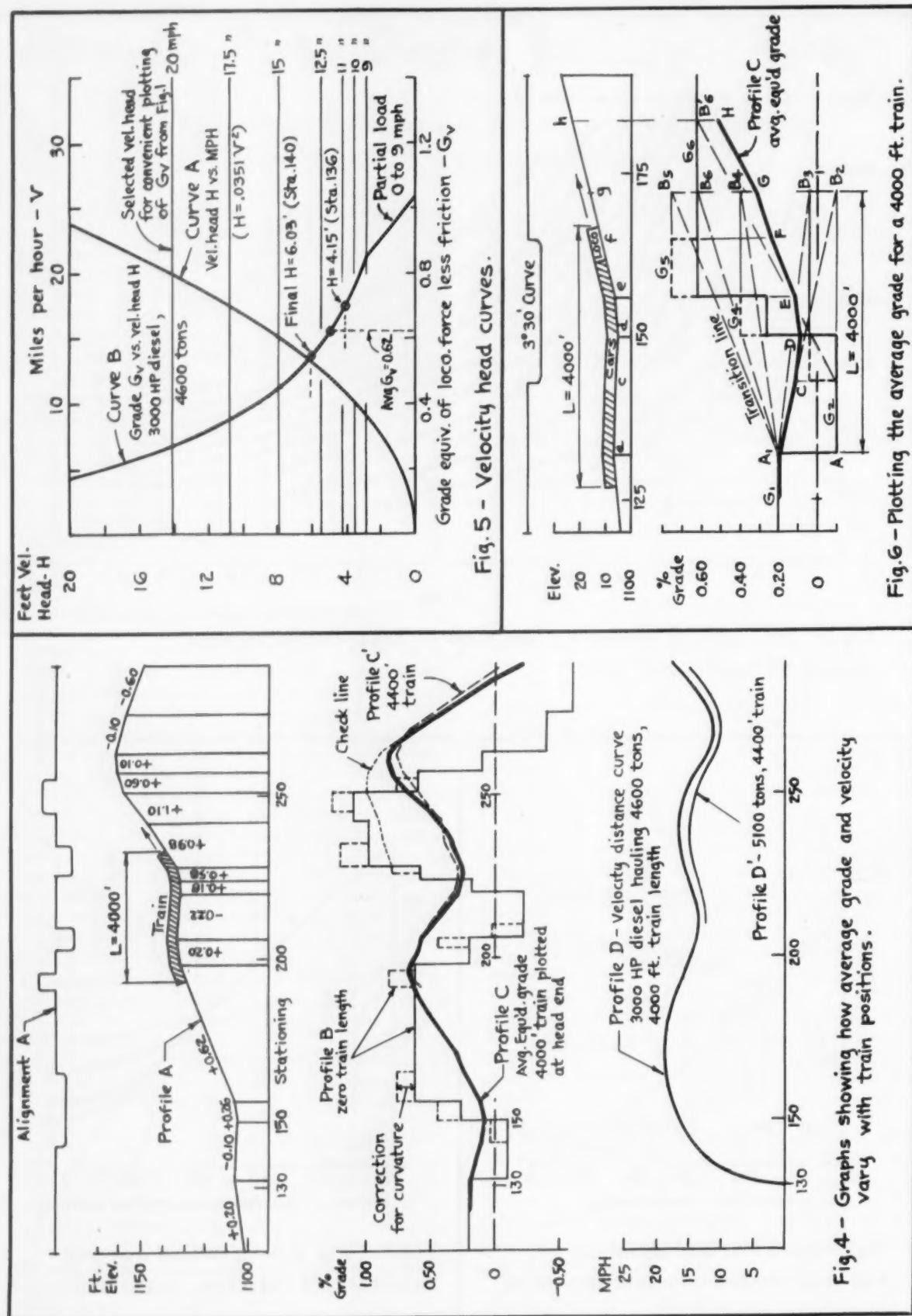


Fig. 5 - Velocity head curves.

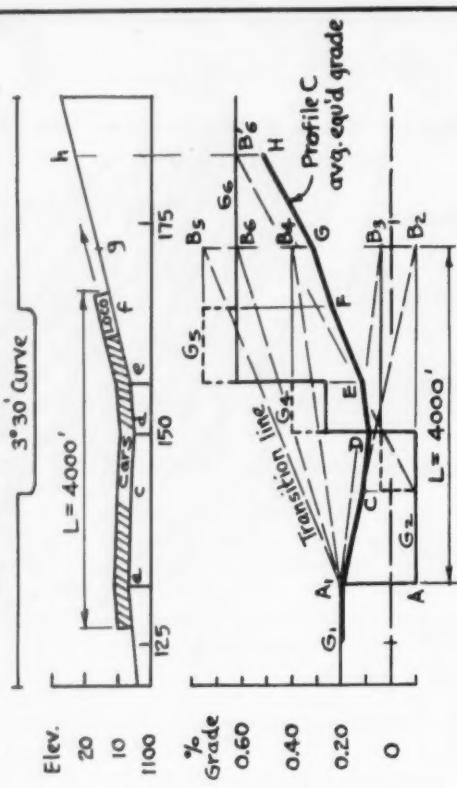
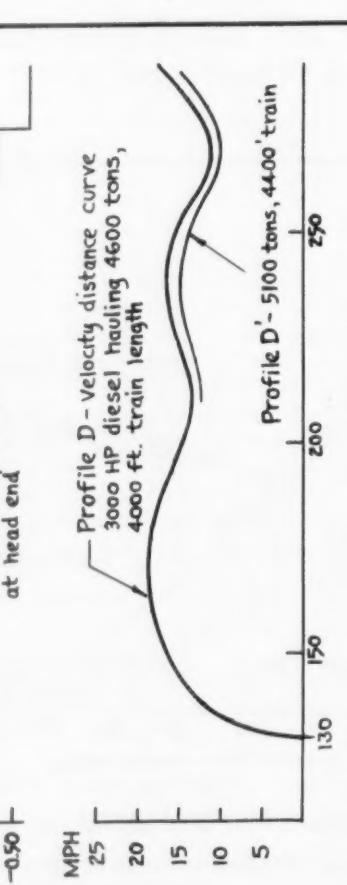


Fig. 6 - Plotting the average grade for a 4000 ft. train.



show how the trailing-load curves are useful in that event.

## II. Complex Momentum Grades

The foregoing grade situations permit more or less direct solutions from curves because grade and speed values may easily be selected. Certain momentum grades require calculations involving velocity changes more detailed than outlined in Problem 2. For example, the train under study in Fig. 4 attains a significant approach velocity, unknown until computed, before entering upon the ruling portion. The situation is further complicated by a constantly varying average equated grade under the train.

A method is presented here that develops the "velocity-distance" curve such as Profile D in Fig. 4. The profile shows clearly those distances in the critical speed zone and aids in deciding whether the tonnage tested is satisfactory.

The energy possessed by a train due to its velocity may be expressed as the work that would be done in lifting the train vertically a distance  $H$ , called the "velocity head." Curve A of Fig. 5 represents the relation between the velocity head in feet and actual velocity in mph. Curve B in the same diagram represents the relation between velocity head and the grade equivalent  $G_V$  of the locomotive tractive force above that needed to balance frictional resistances. Values of  $G_V$  may be read from trailing-load curves at selected velocities for the tonnage desired, and plotted as in Fig. 5 on the lines representing the respective velocity heads.

If there is a difference between  $G_V$  and the actual grade  $G$ , velocity and velocity head changes occur. The change in velocity head  $\Delta H$  over a distance  $S$  amounts to the difference ( $G_V - G$ ), using average values, multiplied by  $S$ , and divided by 100. This statement may be applied together with the two curves just discussed to set up a tabular means for progressing velocity calculations from one train position to another.

**Problem 5** utilizes a tabular form for computing the velocities of a 4,600-ton train over the profile shown in Fig. 4.

Space does not permit inclusion of the sequel problem, analysis of the velocity-distance profile computed in Problem 5 to arrive at the final hauling capacity for the momentum grade. This could be done by (1) noting that the velocities and distances in the critical zone appear to permit a higher tonnage; (2) selecting a higher tonnage, 5,100 tons in this case, from the trailing load curves—based on a rating speed and some average grade where Profile D indicates minimum speed—and (3) constructing a second velocity-distance curve to verify the higher tonnage. Frequently the third step is unnecessary. After experience one may often judge the final tonnage after drawing only one velocity-distance curve.

Calculations of this nature were used to obtain the deceleration data in Fig. 1 and 3 for uniform grades where train length is disregarded. Such calculations can develop similar acceleration data for estimating approach speeds for relatively simple grade systems. Velocity-distance data also may assist in the design of proposed grades and show where substantial construction econo-

mies may result by permitting otherwise excessive grades for short distances.

The average equated grade under the train sometimes varies almost continuously over the stretch under investigation. This is the case for the train shown in Fig. 4. A method is available for graphically constructing the Profile C, the continuous curve of average equated grade under the train. This curve facilitates the selection of grade values to be used in rating calculations.

## III. Adjusting for Train Length

If the usual concept of grade representation is changed so that the vertical dimension becomes per cent grade instead of elevation, Profiles B and C in Fig. 4 become possible. The Profile B (vertical and horizontal lines) is the curve of average equated grade under a train of zero length. Ordinates on this profile correspond to grades on Profile A except at locations where the correction for curvature has been graphically added. Construction of this profile is the first step of the method.

The remaining steps develop curves, plotted always at head-end positions, and consider the entire train as a uniformly distributed weight. To construct the grade curve, such as Profile C, two principles are observed: (1) The profile is continuous and (2) throughout the distance where the head end traverses one grade and the rear another grade, Profile C is parallel to the "transition" line between the two grades. The transition line (lines  $A_1B_2$ ,  $A_1B_3$ , etc., in Fig. 6) is the line the average curve would trace if only two grades were occupied.

**Problem 6** illustrates the construction of the partial Profile C shown in Fig. 6 by drawing a series of segments parallel to the proper transition lines.

The accuracy of the plotted grade curve is checked at those points where it normally coincides with the profile for zero train length or with a transition line. If several grades are continuously occupied, a check profile such as shown in Fig. 4 may be started from any point on Profile B and should coincide with Profile C within a train length.

Railroad records of sufficient detail should be used as sources when applying this method. In many situations it has been found that valuation data over 30 years old have yielded surprisingly accurate answers to rating and related problems.

Alternative methods of merit do of course exist for handling any of the above outlined situations. But the techniques presented here offer as the need arises an integrated and fairly comprehensive scheme for working out most rating problems. Their practical value has been demonstrated in coping with voluminous rating work occasioned by a large dieselization.

Acknowledgment is particularly due to J. Z. Heskett, W. J. Dixon, and J. E. Sunderland, who together with the author are engaged in tonnage rating and special study work under the direction of E. S. Rupp, assistant to vice-president, operation and maintenance, of the B&O.

**PROBLEM 1.**—A 4-mile grade averages 0.95% and 3 degrees curvature. Near the summit for about 0.2 mile the grade under train averages 1.15% and the curvature 1 deg. Find the hauling capacity, assuming unfavorable ap-

proach for a 3,000-hp diesel-electric locomotive handling 50-ton average cars, using the curves of Fig. 1 and 2.

**SOLUTION:** The average equated grade (including correction for curvature) for the 4 miles is  $(0.95\% + 3 \text{ deg} \times 0.04\% \text{ per deg}) 1.07\%$  and for the ruling portion  $(1.15\% + 1 \text{ deg} \times 0.04\% \text{ per deg}) 1.19\%$ .

Because of unfavorable approach the entire grade may be traversed in overload. A likely average speed, 11 mph, means a total overload of about  $(4 \text{ miles} \times 60 \text{ min} \div 11 \text{ mph}) 22 \text{ min}$ . When the loadmeter registers sustained maximum current between specified allowable periods, a conservative but practicable instruction to enginemen limits total overload on the grade to the shorter period, no interpolation allowed. The amperage here, then, must not exceed that for 30 min, the shortest period on the overload curve of Fig. 2 over 22 min. The 30-min limit occurs at 10.1 mph, but a conservative value, 10.3 mph, is selected, with related adhesion of 18.4% not likely to cause trouble on the 0.2-mile stretch.

The trailing load curves at 10.3 mph and 1.19% grade yield a hauling capacity of 3,025 tons handled on the 1.07% grade at 11.3 mph and 17.0% adhesion, safely below the 18% limit. The small difference in speeds on the two grade sections is not sufficient to require investigating the inertia effects.

**PROBLEM 2.—Determine if the hauling capacity found in Problem 1 must be reduced for a 1.4% grade on tangent 1.0 mile long, beginning in a sag, where speed limit is 45 mph.**

**SOLUTION:** The trailing-load curves indicate for 3,025 tons on a 1.4% grade a deceleration distance of 1.7 miles from 50 mph to balance speed. But at 45 mph, Fig. 3 shows available deceleration distance equivalent to 88%. The one mile grade is equivalent to  $(1.0 \text{ mile} \div 1.7 \text{ miles}) 59\%$ , with remaining distance equivalent  $(88\% - 59\%) 29\%$ , corresponding to a minimum speed 17 mph, which of course is not limiting.

**PROBLEM 3.—Find the hauling capacity of a 3,000-hp diesel-electric locomotive starting a train of 50-ton freight cars on a 0.6% equated grade.**

**SOLUTION:** The additional resistances during starting due to inertia and break-away friction may be conservatively estimated at twice the normal friction (level tangent resistance) at 5 mph. For 50-ton cars the normal value is about 4 lb per ton, equivalent to 0.2% grade. The starting adjustment is  $(0.2\% \times 2) 0.4\%$ . Adding the actual equated grade, 0.6%, results in an adjusted starting grade of  $(0.4\% + 0.6\%) 1.0\%$ , used without significant error for locomotive as well as cars.

In Fig. 1 the curve indicating tonnages at 25% adhesion is that at 7.1 mph, a speed derived from the adhesion curve of Fig. 2. At 7.1 mph and a 1.0% grade, the trailing-load curves yield a starting tonnage of 4,950.

**PROBLEM 4.—Find the running time between Stations A and B over the profile indicated in Columns (3) and (4) of the table, observing the restrictions noted in Column (5), for a 3,000-hp diesel-electric locomotive hauling 3,750 tons consisting of 50-ton cars.**

**SOLUTION:** Balance speeds for 3,750 tons are read from the

ESTIMATION OF RUNNING TIME						3,750 tons (50-ton cars)					
Profile			Related schedule			MPH					
From	To	Miles	Avg.	Operating	Bal.	Ad-	Train	Min	Justed	Min	
station	station	grade	% eqv.	% est'd.	limitations	ance	(6)	(7)	(8)	(9)	(10)
(1)	(2)	(3)	(4)	(5)							
A					Stop						
		1.0	- .28	45 mph		45+	25	2.4			
		1.6	+ .64	45 mph		14.3	7.1				
		0.5	- .42	25 mph Br. 106		45+	35	0.9			
		0.7	+ .71	45 mph		13		3.2			
		1.0	+ .10	45 mph		31		1.9			
		1.2	+ .84	45 mph		11.3		6.4			
		0.8	- .22	45 mph		45+	45	1.1			
		1.1	- .25	45 mph		45+	45	1.5			
		1.1	- .05	45 mph		42	30	2.2			
B	9.0				112	30		26.7			
					Stop 5 min	112	5	5.0			

trailing-load curves for the grades encountered and entered in Column (8). Sufficient accuracy is obtained, if only certain speeds are adjusted as in Column (9) to estimated average speeds where speed limits and required stops apply. Times in Column (10) are then computed and totaled for comparison with the allotted time in Column (7).

**PROBLEM 5.—To check the performance of a 3,000-hp diesel-electric locomotive hauling 4,600 tons, 50-ton cars, over the profile shown in Fig. 4, construct the velocity-distance profile assuming stop at Station 130.**

**SOLUTION:** (1) First the Curves A and B are drawn (see Fig. 5).

(2) Data for Columns 1, 2, and 3 of the table are determined from analysis of profile and alignment. Values of  $G_v$  averaged

station	s	g	$G_v$	$G_v - G$	$\Delta H$	mph
(1)	(2)	(3)	(4)	(5)	(6)	(7)
130					0	0
	100	0.20	0.68	1.01	0.88	0.81
131					0.88	0.81
	100	0.20	0.68	0.96	0.78	0.76
132					1.60	1.57
	200	0.19	0.68	0.89	0.70	1.48
134					0.68	2.97
	200	0.18	0.68	0.77	0.59	1.18
136					4.20	4.15
	400	0.15	0.68	0.62	0.47	1.88
140					6.87	6.03
	500	0.12		0.50	0.38	1.90
145					7.93	15.0
	500	0.10		0.42	0.32	1.60
150					9.53	16.4

for the 4,000-ft train are obtained from Profile C, Fig. 4, the curve of average equated grade. Construction of this curve is described in Problem 6.

Values in Columns 4, 5, and 6 are found progressively for each interval. Computations are initiated at the point of known velocity, Station 130, where  $H = 0$ . Curve B facilitates selection of average  $G_v$  values. For example, at Station 136, where  $H = 4.15$  ft is the final value and is spotted on Curve B, a trial  $G_v = 0.68\%$  is indicated. This in turn yields  $\Delta H = (0.68 - 0.15) 400 \text{ ft} \div 100 = 2.12 \text{ ft}$ , and  $H = 6.27 \text{ ft}$  at Station 140. A visually selected midpoint between the two  $H$  values on Fig. 5 yields a more accurate  $G_v = 0.62\%$ , for a final value  $H = 6.03 \text{ ft}$  at Station 140. Considerable time is saved when final  $G_v$  values are estimated in advance. This is possible with experience and was done for locations following Station 140.

(4) Velocities  $V$  are then entered in Column 7. Time is saved if velocity heads  $H$  are allowed to accumulate and converted to velocities on a mass basis with the aid of Curve A.

(5) Finally the Profile D of Fig 4 is plotted.

**PROBLEM 6.—For the portion of track represented by Profile A and Alignment A in Fig. 6 construct Profile C in Fig. 4 of average equated grade under a 4,000-ft train, as the head end passes between Points A and H.**

**SOLUTION:** (1) First the Profile B is constructed for zero train length.

(2) If Grade  $G_1$  is assumed longer than 4,000 ft, Profiles B and C coincide at least at Point A, which is a starting point.

(3) At a scale distance 4,000 ft from  $A_1$  Points  $B_2$ ,  $B_3$ ,  $B_4$ ,  $B_5$ , and  $B_6$  are plotted establishing the transition lines  $A_1B_2$ ,  $A_1B_3$ , etc., between Grades  $G_1$  and  $G_2$ ,  $G_1$  and  $G_3$ , etc. (In practice the points need not be labeled, nor the lines drawn).

(4) Profile C is extended from  $A_1$  by drawing a series of segments parallel to the proper transition lines until Point G is reached and the rear end enters Grade  $G_2$ . It then is necessary to establish the direction of the transition line between Grades  $G_2$  and  $G_6$  to extend the curve to Point H.



**DEMOUNTABLE TRUCK BODIES**, each 20 ft long and loaded two to a flat car, may be handled with an ordinary 26,000-lb capacity lift truck.



A FLAT BED SEMITRAILER takes the same bodies in pick-up and delivery service. The lift truck lowers the body into position on trailer or flat car and . . .



SIMPLE TIEDOWN LOCKS in each corner of the body engage the trailer frame or car frame as shown. Freight cars need no adaptation except pockets for the four latches.

## Another Idea in Piggyback

In what might be described as a combination of "piggy-back" and LCL merchandise container, John Bridge of Canadian Rail Van Systems, Inc., is proposing a freight handling method which he feels offers greater flexibility than rail haulage of conventional highway truck trailers.

Mr. Bridge argues that the present conception of trailer-on-flat car movement entails considerable "wasted" cubage over each flat car since the revenue load must ride above the wheels and axles of both the flat car and

the trailer. He feels, too, that such operation entails a relatively high proportion of dead weight to revenue weight, particularly if the trailer is equipped with tandem axles.

To overcome these conditions, Mr. Bridge has proposed detaching the wheels from the trailer body—in effect, he makes the trailer body a container, rather than a vehicle. Variations of this idea have been worked up to the demonstration stage a number of times during the past 25 years.



**HOUSEHOLD GOODS** may be handled in the demountable trailer bodies which can be "set out" at origin or destination by this portable ramp.

but apparently none has been put forth since lift trucks capable of handling such a load have been on the market. The basic new idea of Canadian Rail-Van is a combination using (1) a standard heavy-duty lift truck for portaging (2) half-size (20- by 8- by 8-ft) trailer bodies of such dimensions that two may be handled on a flat-bed highway trailer in many states or on a 50-ft flat car. If body unit length is restricted to 17 ft two units can be handled on a 35-ft trailer bed.

Two sample body types were used in a recent demonstration at the Chicago Great Western piggyback terminal in Chicago. One, of steel construction, weighed about 3,000 pounds.

The other body type, of aluminum, weighed somewhat less than 1,000 pounds. They were handled from trailer to flat car and back again by 26,000-lb capacity Ross lift truck furnished by the Clark Equipment Company.

Mr. Bridge has not overlooked the fact that conversion of railroad cars to handle these trailer bodies would be simple and inexpensive compared to the investment which a trucker must make to handle them in either over-the-road or pickup-and-delivery service. He says, however, that, based on his personal experience in both the motor carrier and freight forwarder fields, the motor carriers may soon be pressured by economic forces into seeking new tools for their business. He suggests that the small trailer bodies could be handled individually on small pickup-and-delivery trucks; transferred to an over-the-road flat-bed trailer—two bodies per trailer—and retransferred to smaller city delivery trucks at the destination truck terminal. Such an operation, he points out, would simplify the trucker's terminal operation at both origin and destination. The same ease of handling and interchangeability would, he contends, be equally advantageous in rail LCL operations.

Initially, Canadian Rail Van is aiming for the household goods moving market rather than the general freight field. Mr. Bridge points out that if such equipment were introduced into this field, railroads would have an opportunity to participate in a much larger share of this traffic than they do at present.

## Benchmarks and Yardsticks

**AMONG SOME BOOK REVIEWS** your reporter has read recently was one that had to do with a book which viewed with alarm the progress people have made in the physical sciences and technology (H-bombs, etc.). The author, not unaptly, likened this process to one whereby man has sought, and largely attained, some of the powers over physical nature that God has—but without acquiring any of His spiritual and intellectual insight, assuring the wise and temperate use of this power.

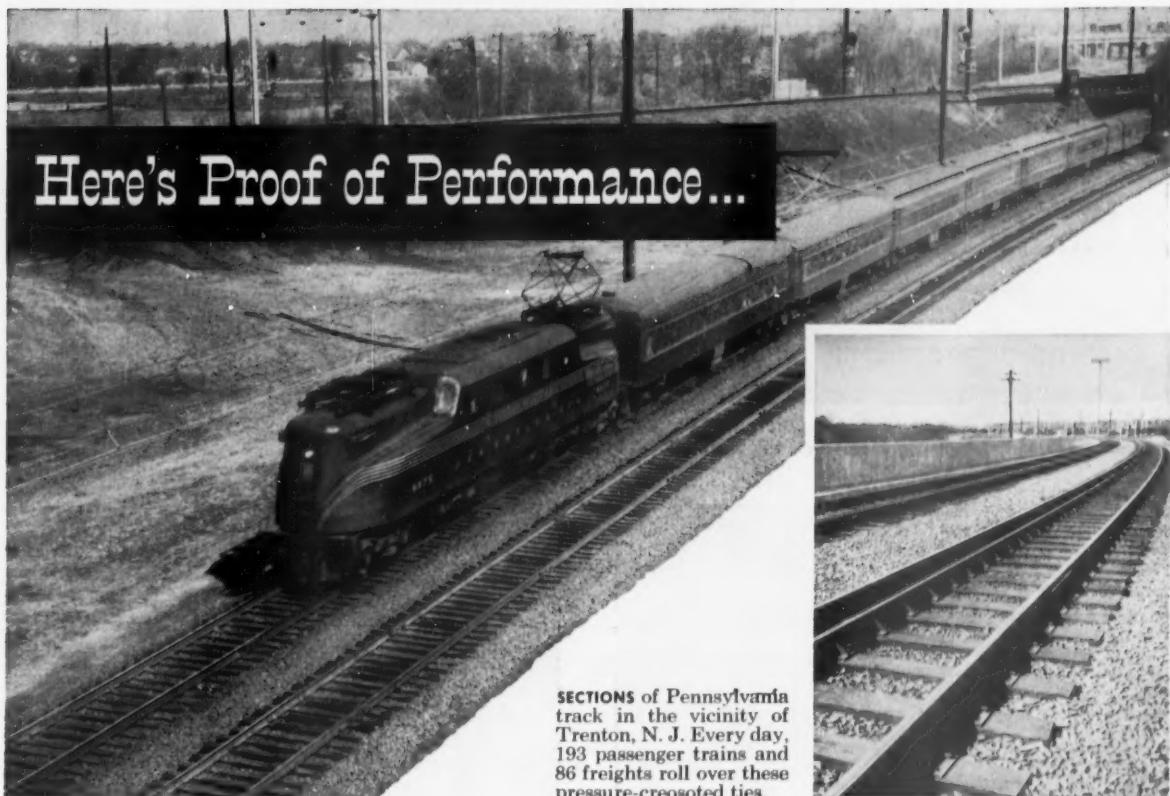
**Nobody would approve** turning over a high-powered automobile to a 6-year-old child—but, relatively speaking, doesn't atomic power, even in the hands of the greatest and noblest man alive, represent a far more dangerous imbalance between physical power and mental maturity than exists when a child in the driver's seat of an automobile, or even of a locomotive, is free to release its potential destructive force?

**The author** of the book (as we recall the review) seemed to believe that human conquest of physical power had gone too far. But a corollary conclusion would be that more intensive effort should be put forth to develop "the whole man." If as much effort had been expended during the past three centuries in studying and improving human beings—as has been in studying and controlling physical matter—maybe the results would be just as gratifying.

**Your reporter suspects** that the religionists—the really learned ones—know more about man *as a whole* than anybody else does. Unfortunately, their knowledge is extremely difficult to convey to others, since it is usually expressed in symbolic language that is without much meaning to people with only a secular education. It may be taken as a sign of very great progress that some of the abler people in psychology and religion have now begun to understand and respect each other's fields of knowledge.

**The ignorant layman**, such as your reporter, cannot hope to make much of a contribution toward correcting the imbalance between the development in the physical sciences and that in the sciences having to do with man himself. One thing he can do, however, is not to exult too much over technological progress—he can try to cultivate humility and self-restraint (the religionists call it "fearing God"), as his direct or indirect power over external nature increases. One of the big differences between the free and enslaved parts of the world is that, in the former, there are still a few people in positions of leadership who "fear God." In the latter, none of the leaders fears God; they have abolished Him—or declare they have, anyhow.

J. G. L.



**Here's Proof of Performance...**

SECTIONS of Pennsylvania track in the vicinity of Trenton, N. J. Every day, 193 passenger trains and 86 freights roll over these pressure-creosoted ties.



## Pennsylvania Railroad's pressure-creosoted ties are lasting an average of *more than 30 years!*

- The Pennsylvania Railroad—with its 23,679 miles of track in 13 states and the District of Columbia—stands at the head of the list in annual tie purchases. So it's significant that all but a tiny fraction of a percent of the road's 61 million ties are pressure-creosoted.

Pressure-creosoted ties on the Pennsylvania are lasting an average of more than 30 years. Some untreated ties placed because of necessity in

1942 had a life of only 10 to 12 years. Pressure-creosoted ties by lasting three times as long, are saving the railroad millions of dollars a year on maintenance.

The Pennsylvania favors a hardwood tie, with the majority being red oak. They are treated with Creosote-Coal Tar Solution.

Creosote has proved its effectiveness as a wood preservative in many years of money-saving performance

on the nation's leading railroads—the most convincing evidence of all.

When you use Creosote for ties, poles, posts and timbers, be sure to specify USS Creosote, the uniform product of United States Steel's tar distilling operations. For complete information, contact our nearest Coal Chemical sales office or write directly to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

# USS CREOSOTE



UNITED STATES STEEL

4-1492



FAIRMONT HY-RAIL car has retractable flanged guide wheels, front and rear, for operation on the track.



GUIDE WHEELS shown raised for highway travel. This is one of several units with folding doors.



SIDE DOORS in pickup-type bodies facilitate loading and unloading tools and materials.



PANEL-TYPE bodies are applied to some of the units. These will be tested for use as gang cars.

## FOR PATROLLING NEW HAVEN TRACKS . . . These Cars Ride Road or Rails

Substantial economies are being realized through the use of 25 vehicles designed to operate either on or off the track

To a large extent, track-patrol activities on the New Haven are now being performed with the aid of 25 motor cars of a special type equipped with both pneumatic tires and flanged wheels for operation on either the track or over the highway. These vehicles, known as Hy-Rail cars, are expected to produce an estimated annual saving of \$120,000 on an expenditure of about \$130,000. They are headquartered throughout the system, as shown on the accompanying map, to cover the territory formerly patrolled by motor and hand cars and trackwalkers.

Through the use of the Hy-Rail cars, which normally carry one driver-operator and a helper, the road has been able to reorganize into fewer and longer units the territories formerly patrolled by trackwalkers and regular

motor inspection cars. In addition, it has been possible to make certain changes in the scheduling of track-inspection work to the extent that, at the present time, all main-line track is patrolled once each regular work day, track which carries fairly frequent traffic is patrolled once every two days, and those branch lines which accommodate only infrequent trains are patrolled once every four days.

The Hy-Rail cars are capable of traveling over the highway at speeds as high as 60 mph, although their normal highway operating speed is in the neighborhood of 35 or 40 mph. They are limited to a maximum speed of 25 mph on track and considerably lower speeds are employed when patrolling.  
*(Continued on Page 64)*

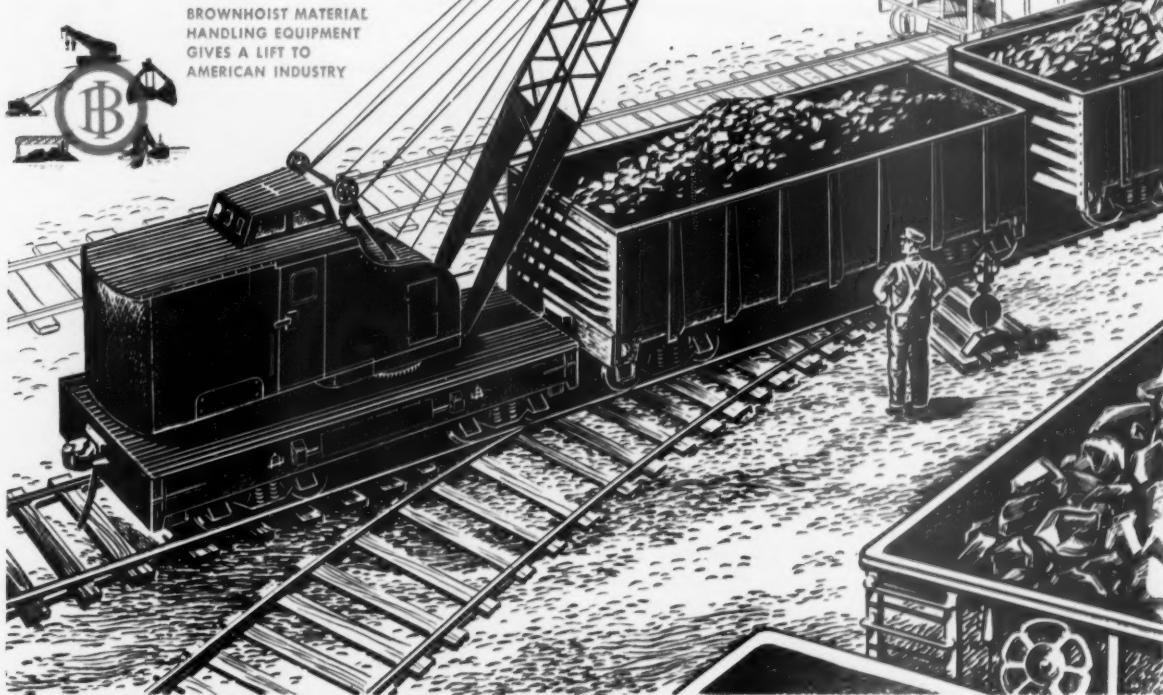
# YOU BUY ONE MACHINE . . . GET THE PERFORMANCE OF TWO



**BROWNHOIST** diesel-electric locomotive-crane double as switch engines

The exceptional performance of Industrial Brownhoist Diesel-Electric Locomotive-Cranes handling bulk materials with magnet, hook or bucket is well known to railroads, mines, steel mills and other large manufacturing plants. Not so well known, perhaps is the fact that these powerful, efficient machines perform equally well as switch engines. Employing electric powered locomotion with the same type of travel generator, motor and axle reduction unit as modern switching locomotives, Brownhoist Cranes provide rapid acceleration, high drawbar pull and speeds of twelve miles per hour for switching operations. They will haul up to 7 or 8 heavily loaded cars on straight, level track. During switching operations, the rotating superstructure that actuates the crane mechanism can be mechanically disengaged to eliminate wear on the shafts and other driven parts in the upperworks. Brownhoist Cranes are available in capacities from 25 to 90 tons and up for your switching and heavy duty materials handling operations — two dependable pieces of equipment in one husky unit for greater versatility and economical operation. For complete information, consult your nearest Brownhoist representative or write us today.

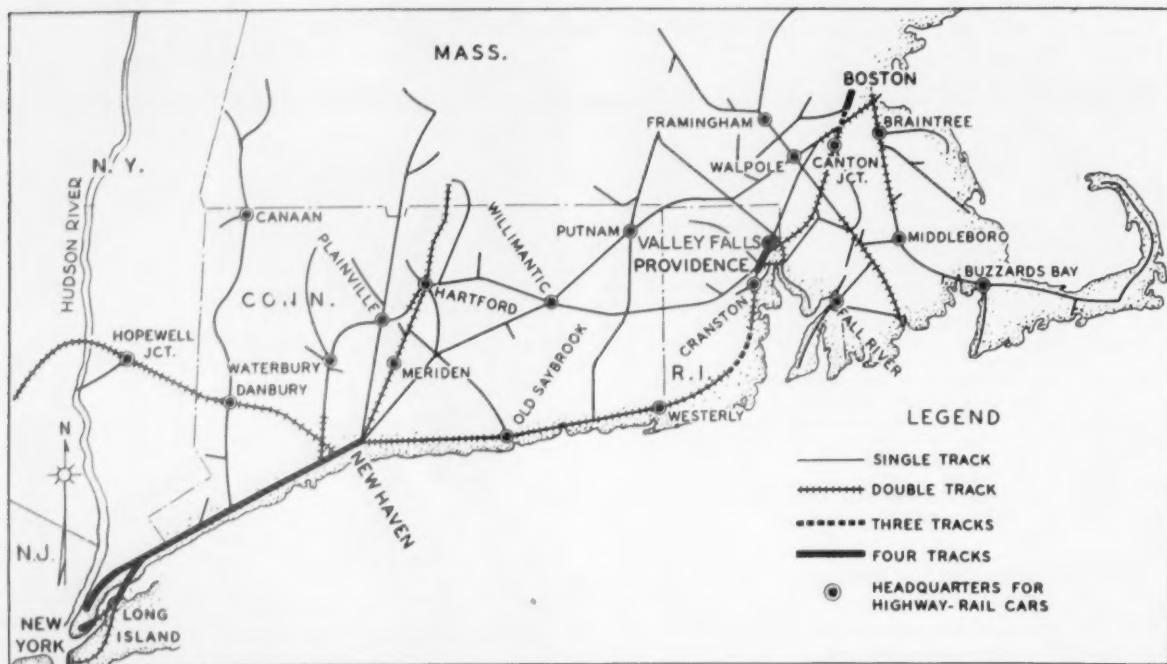
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# BROWNHOIST

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## CARS RIDE ROAD OR RAILS



DISPOSITION of the rail-highway cars throughout the New Haven is shown by this map.



ABILITY TO OPERATE over the highway adds to flexibility of the vehicles, particularly in congested terminals.



DRIVER'S COMPARTMENT of a Hy-Rail Car. Choice of three forward and one reverse speeds are available.

(Continued from page 62)

A hand throttle is located on the steering post for the operators' convenience in maintaining a steady speed while patrolling, thus eliminating the necessity for him to keep his foot on the accelerator pedal.

### Features of the Cars

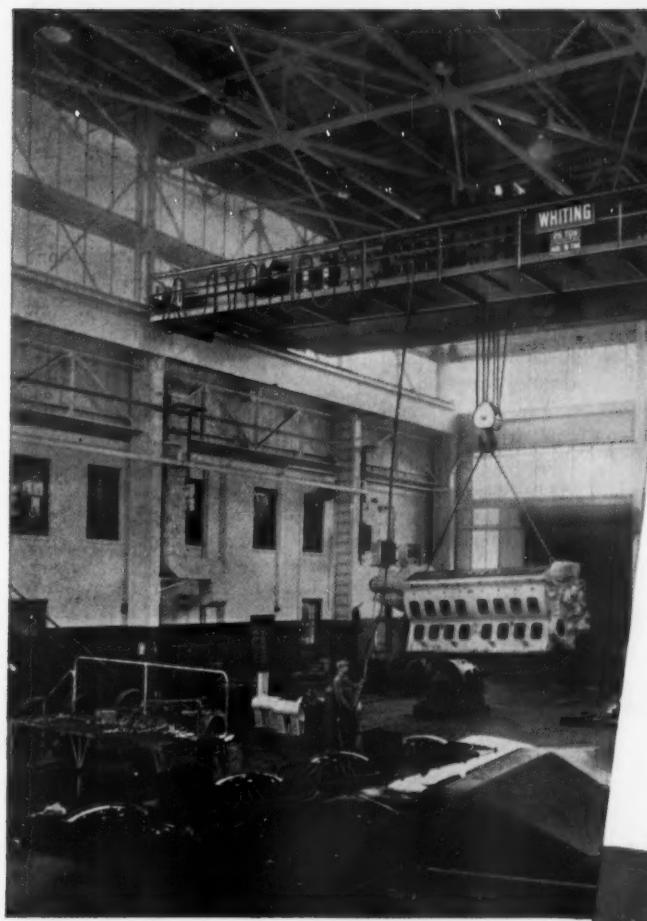
Purchase of the cars was begun on the New Haven in July 1952 when one car was bought and put into service as an inspection car. The first unit of a new model was purchased in March 1953 and deliveries of this model continued at a steady pace until the twenty-fourth car of this type was received on February 2, 1954.

The cars are designed specifically for maintenance-of-way service and, as produced by the manufacturer, come equipped with an enclosed cab and an open pickup-type body.

They are powered by Continental 4-cylinder engines and are equipped with 4-wheel drive, hydraulic brakes, cab heaters, electric windshield wipers, and 7:00 by 15:00, 6-ply puncture-proof tires. They have three-speed transmissions, but there is an additional "super-low" ratio which actually gives them six speeds forward and two in reverse. Each car is equipped with non-load-bearing flanged guide wheels at both front and rear. These wheels are manually retractable.

The retraction mechanisms are provided with pin locks and rubber-cushioned spring-loaded safety catches to secure the guide wheels in their raised position. The rated load capacity of the Hy-Rail cars is 1,500 lb.

Three separate styles of Hy-Rail cars are presently (Continued on page 66)

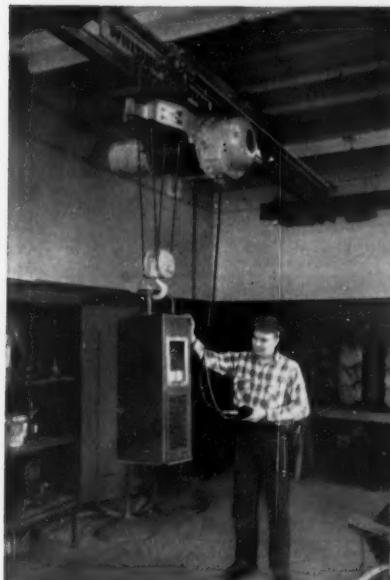


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tion on the equipment illustrated!

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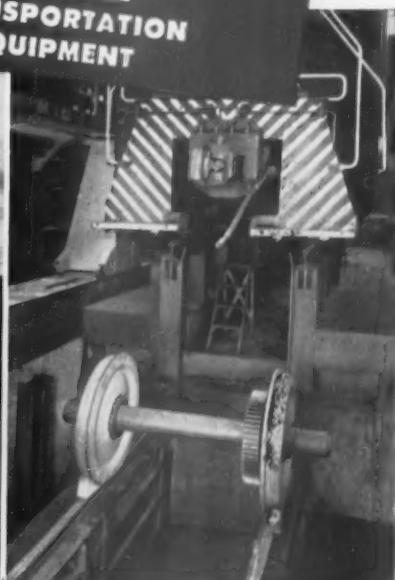
Diesel engine is hoisted with a Whiting Engineered Overhead Traveling Crane. Equipped with two hoists, a 25-ton for heavy loads and a 5-ton for lighter loads, lifting is easy and safe.



The machine shop is served with fast and efficient overhead handling by a Whiting Trambeam Crane as is the cleaning and degreasing room.



Whiting Triple-duty Cross-Over Bridges shown in raised position allow men and materials to easily cross entire shop on both levels.



Whiting 100-ton sectional drop table lowers a set of wheels. Locomotive is securely held up by Whiting "HV" body supports.

## CARS RIDE ROAD OR RAILS

(Continued from page 64)

in service on the New Haven. Eleven of the cars are as received from the manufacturer. Certain revisions have been made on the others. The road contracted with an outside concern for the installation of folding-type cab doors on seven cars to facilitate entrance and exit to and from the cab. It is planned eventually to equip all of the 25 Hy-Rail cars presently in service with such doors.

When the folding doors were installed the glass area per door was reduced (see illustrations), necessitating the repositioning of the rear-view mirror from the door-post to the front left fender.

### To Test Use as Gang Vehicles

Seven of the Hy-Rail cars have been equipped with special panel-type bodies. This work was done under contract on chassis purchased without bodies. The panel-type bodies are open in the rear, permitting rear loading

—which is not provided on the pickup-type cars where the access door is on the side. Using these panel-bodied cars the New Haven plans to make tests to determine the advisability of using the cars as gang vehicles.

Several of the cars have been equipped with removable snowplows, mounted on the front of the guide-wheel frame. Of the 25 Hy-Rail cars in service, two are maintained as extra cars for use whenever regular service cars are shopped.

Maintenance and servicing of the Hy-Rail fleet is done at the New Haven's regional maintenance shops at Reedville, Mass., Torrington, Conn., Providence, R. I., New London, Conn., Hartford, New Haven and Danbury—in a manner similar to the road's highway truck maintenance program.

The idea of using these cars on the New Haven was conceived in 1951 and the program was developed under the direction of the road's engineering department where operation of the cars is presently under the supervision of T. P. Polson, chief engineer, and W. H. Haggerty, roadmaster. Maintenance of the cars is under the direction of J. W. Mangan, superintendent of work equipment.

## Painting Cars Automatically

### ... HERE'S HOW THE GN DOES IT

An automatic traveling spray booth, introduced by the DeVilbiss Company of Toledo, Ohio, is being used for the first time in spray painting freight cars at the Great Northern car shops, St. Cloud, Minn. The spray booth operates somewhat like earlier models used in painting passenger cars, but with the important difference that hand spraying is replaced with automatic transverse coating machines for the sides and a gang arrangement of automatic spray guns on top of the unit.

At the St. Cloud shops, four freight cars are placed in line on the painting track inside the shop and the booth moves on rails past the cars, under push-button control. Each car receives two coats of paint on both sides and one on the roof. The ends of the cars are hand sprayed by workmen using extension spray guns. These workmen, who ride inside the traveling booth, stop at each spot where car ends are sprayed. The complete cycle takes 48 min, or 12 min per car for a single coat.

This method of painting freight cars is said to produce excellent results from the standpoint of car appearance, providing a uniform dependable coating and conserving labor. Another factor of importance is the economical use of material which costs from three to four dollars a gallon. With each car requiring from six to seven gallons of coating material, the waste factor has been given special study in this installation to reduce it to a minimum.

The new automatic traveling booth has controls within easy reach of the operator and is equipped with inside platforms which can be raised or lowered to enable the operator to spray the ends of the cars efficiently. The booth, a self-contained painting unit, is equipped with



its own compressors, pressure regulator and filter for spray-gun air, and a circulating system with paint capacity up to 110 gal. Safety provisions include a CO-2 system.

Users report that with ordinary spray methods two men take 30 min to apply one coat. The traveling booth, according to the same users, now does a more thorough job in about 12 min. The compactly designed traveling booth eliminates the need for exhausting huge volumes of air from the building and so avoids the high cost of heating comparable volumes of outdoor replacement air, characteristic of the older large booths.

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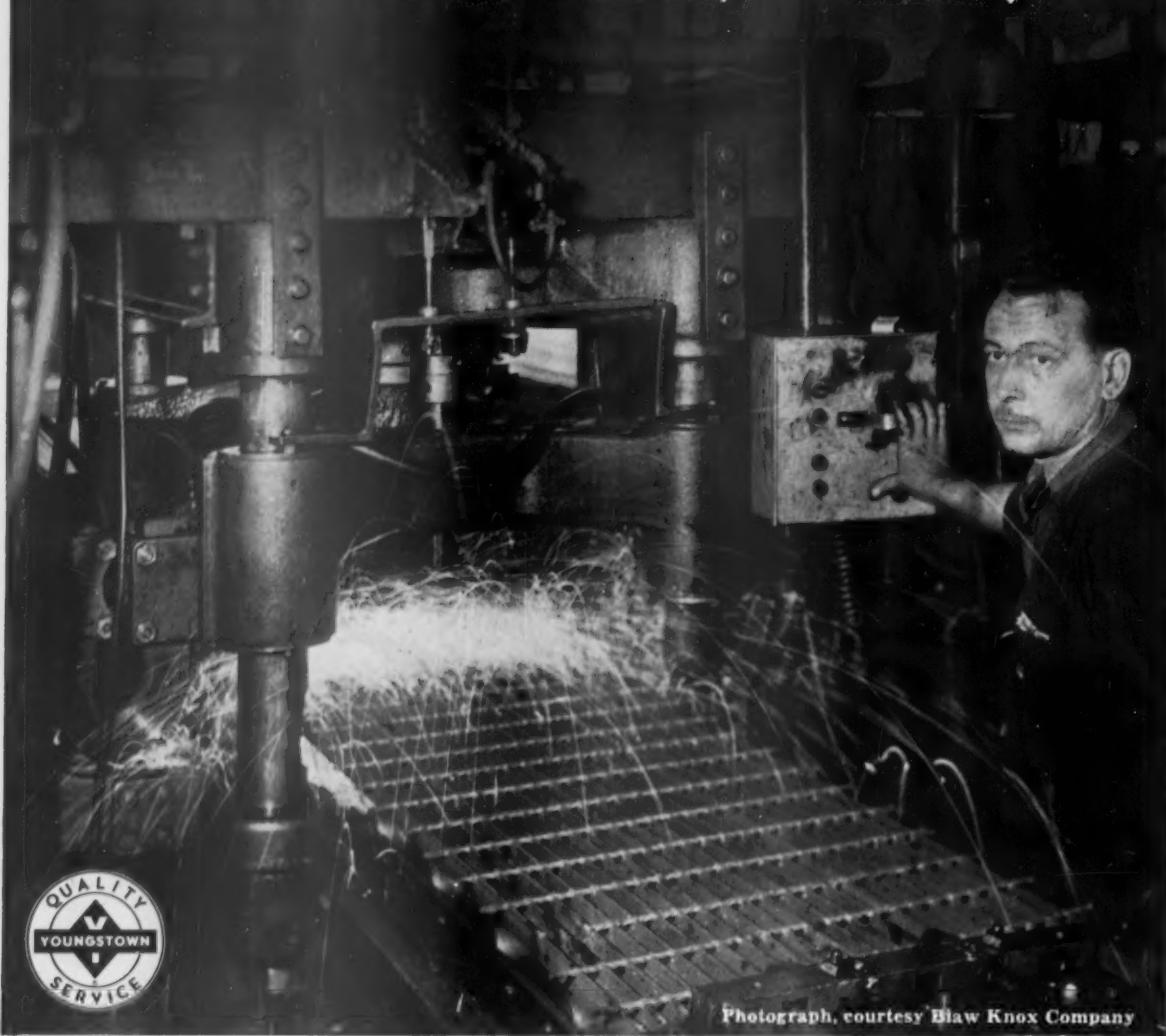
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# Meet the Yoloy Family



Photograph, courtesy Blaw Knox Company

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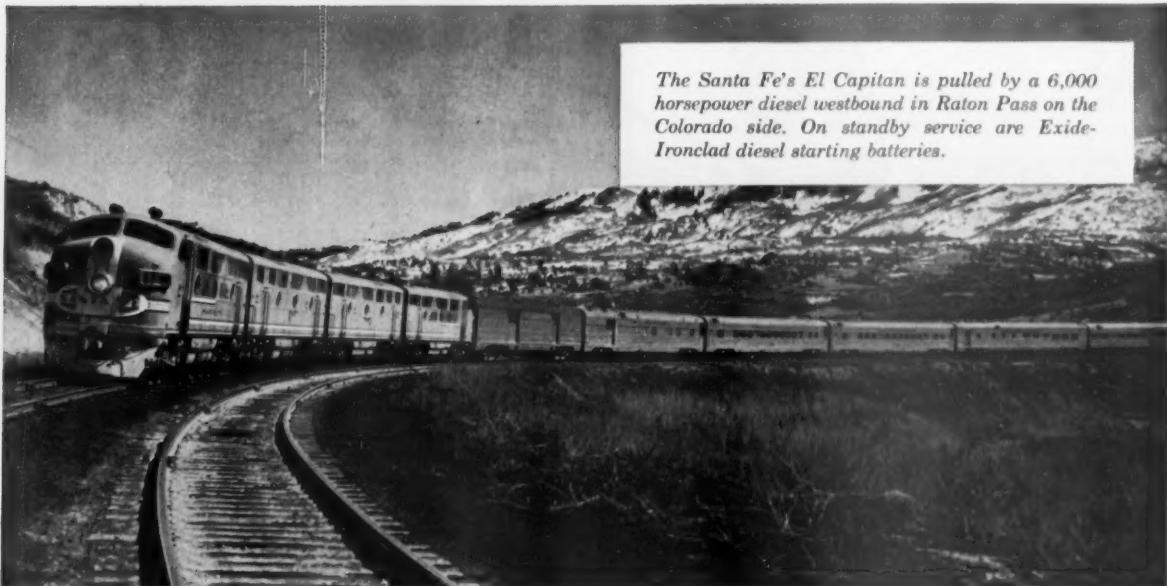
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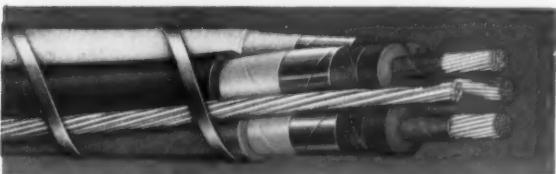
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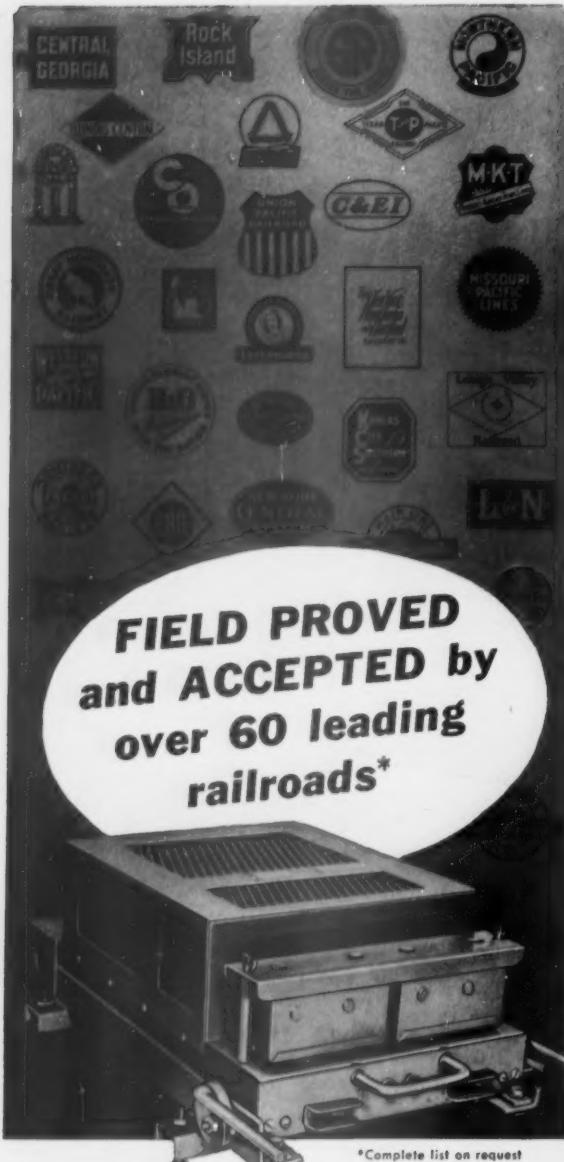
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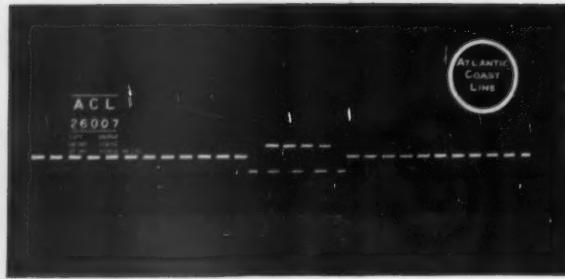
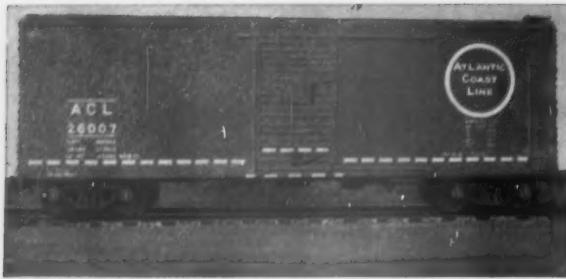
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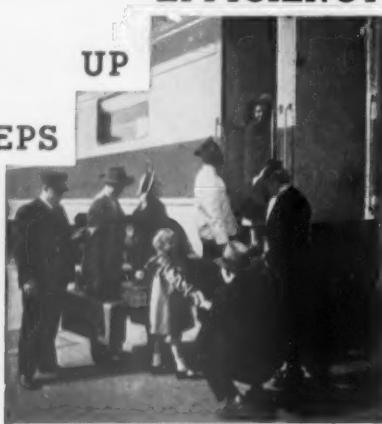
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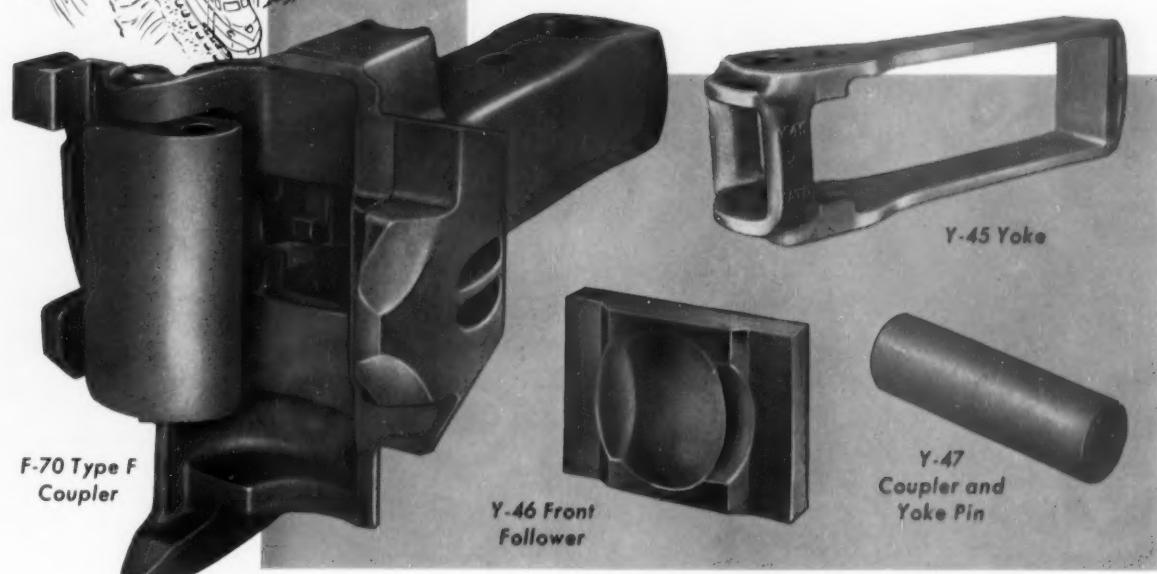
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- Reduction of free slack
- Couples with any existing standard A.A.R. Coupler
- Interlocking feature prevents vertical slipovers and serves to keep cars in alignment, preventing climbing or overturning in event of derailment
- Safety shelf on F Coupler is designed to support mated coupler in event of pull-out
- Threefold anticreep protection
- Easier operation
- Increased service life
- Increased strength
- Lower maintenance cost with Type F Coupler contours holding gage longer because of restricted vertical movement and reduced free slack

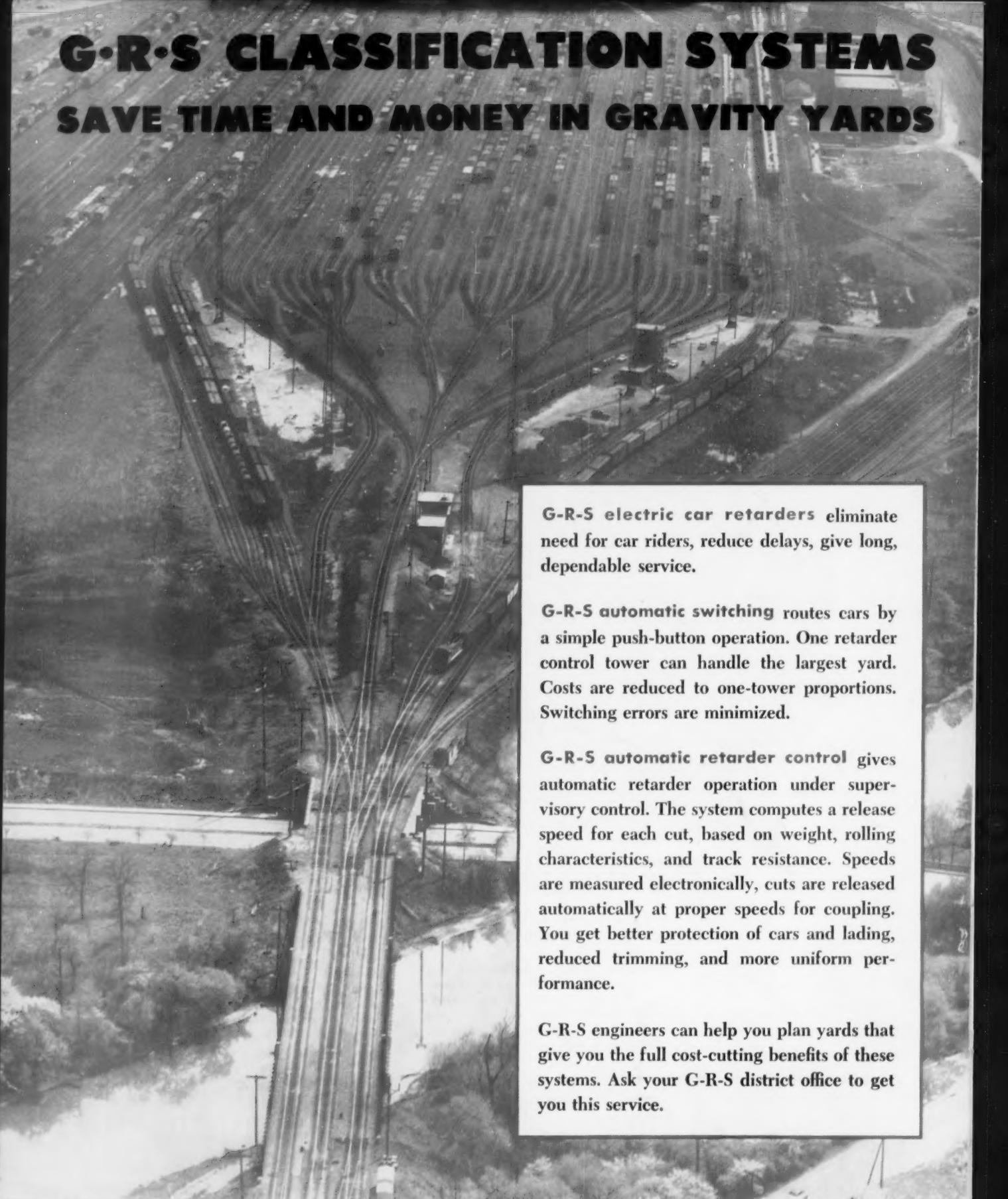
**THE SYMINGTON-GOULD CORPORATION**

Works: DEPEW, NEW YORK

New York • Chicago • St. Louis • Boston • San Francisco • In Canada: ADANAC SUPPLIES, LTD., Montreal, Que.

# G-R-S CLASSIFICATION SYSTEMS

## SAVE TIME AND MONEY IN GRAVITY YARDS



**G-R-S electric car retarders** eliminate need for car riders, reduce delays, give long, dependable service.

**G-R-S automatic switching** routes cars by a simple push-button operation. One retarder control tower can handle the largest yard. Costs are reduced to one-tower proportions. Switching errors are minimized.

**G-R-S automatic retarder control** gives automatic retarder operation under supervisory control. The system computes a release speed for each cut, based on weight, rolling characteristics, and track resistance. Speeds are measured electronically, cuts are released automatically at proper speeds for coupling. You get better protection of cars and lading, reduced trimming, and more uniform performance.

G-R-S engineers can help you plan yards that give you the full cost-cutting benefits of these systems. Ask your G-R-S district office to get you this service.



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